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(54) Title: MOLECULES FOR DISEASE DETECTION AND TREATMENT

(57) Abstract: The present invention provides purified disease detection and treatment molecule polynucleotides (mddt). Also encompassed are the polypeptides (MDDT) encoded by mddt. The invention also provides for the use of mddt, or complements, oligonucleotides, or fragments thereof in diagnostic assays. The invention further provides for vectors and host cells containing mddt for the expression of MDDT. The invention additionally provides for the use of isolated and purified MDDT to induce antibodies and to screen libraries of compounds and the use of anti-MDDT antibodies in diagnostic assays. Also provided are microarrays containing mddt and methods of use.



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MOLECULES FOR DISEASE DETECTION AND TREATMENT

TECHNICAL FIELD

The present invention relates to molecules for disease detection and treatment and to the use of these sequences in the diagnosis, study, prevention, and treatment of diseases associated with, as well as effects of exogenous compounds on, the expression of molecules for disease detection and treatment.

BACKGROUND OF THE INVENTION

The human genome is comprised of thousands of genes, many encoding gene products that function in the maintenance and growth of the various cells and tissues in the body. Aberrant expression or mutations in these genes and their products is the cause of, or is associated with, a variety of human diseases such as cancer and other cell proliferative disorders. The identification of these genes and their products is the basis of an ever-expanding effort to find markers for early detection of diseases, and targets for their prevention and treatment.

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For example, cancer represents a type of cell proliferative disorder that affects nearly every tissue in the body. A wide variety of molecules, either aberrantly expressed or mutated, can be the cause of, or involved with, various cancers because tissue growth involves complex and ordered patterns of cell proliferation, cell differentiation, and apoptosis. Cell proliferation must be regulated to maintain both the number of cells and their spatial organization. This regulation depends upon the appropriate expression of proteins which control cell cycle progression in response to extracellular signals such as growth factors and other mitogens, and intracellular cues such as DNA damage or nutrient starvation. Molecules which directly or indirectly modulate cell cycle progression fall into several categories, including growth factors and their receptors, second messenger and signal transduction proteins, oncogene products, tumor-suppressor proteins, and mitosis-promoting factors. Aberrant expression or mutations in any of these gene products can result in cell proliferative disorders such as cancer. Oncogenes are genes generally derived from normal genes that, through abnormal expression or mutation, can effect the transformation of a normal cell to a malignant one (oncogenesis). Oncoproteins, encoded by oncogenes, can affect cell proliferation in a variety of ways and include growth factors, growth factor receptors, intracellular signal transducers, nuclear transcription factors, and cell-cycle control proteins. In contrast, tumor-suppressor genes are involved in inhibiting cell proliferation. Mutations which cause reduced or loss of function in tumor-suppressor genes result in aberrant cell proliferation and cancer. Thus a wide variety of genes and their products have been found that are associated with cell proliferative disorders such as cancer, but many more may exist that are yet to be discovered.

DNA-based arrays can provide a simple way to explore the expression of a single

polymorphic gene or a large number of genes. When the expression of a single gene is explored, DNA-based arrays are employed to detect the expression of specific gene variants. For example, a p53 tumor suppressor gene array is used to determine whether individuals are carrying mutations that predispose them to cancer. A cytochrome p450 gene array is useful to determine whether individuals have one of a number of specific mutations that could result in increased drug metabolism, drug resistance or drug toxicity.

DNA-based array technology is especially relevant for the rapid screening of expression of a large number of genes. There is a growing awareness that gene expression is affected in a global fashion. A genetic predisposition, disease or therapeutic treatment may affect, directly or indirectly, the expression of a large number of genes. In some cases the interactions may be expected, such as when the genes are part of the same signaling pathway. In other cases, such as when the genes participate in separate signaling pathways, the interactions may be totally unexpected. Therefore, DNA-based arrays can be used to investigate how genetic predisposition, disease, or therapeutic treatment affects the expression of a large number of genes.

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The discovery of new molecules for disease detection and treatment satisfies a need in the art by providing new compositions which are useful in the diagnosis, study, prevention, and treatment of diseases associated with, as well as effects of exogenous compounds on, the expression of molecules for disease detection and treatment.

SUMMARY OF THE INVENTION

The present invention relates to human disease detection and treatment molecule polynucleotides (mddt) as presented in the Sequence Listing. The mddt uniquely identify genes encoding structural, functional, and regulatory disease detection and treatment molecules.

The invention provides an isolated polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). In one alternative, the polynucleotide comprises a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396. In another alternative, the polynucleotide comprises at least 30 contiguous nucleotides of a polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide comprising a polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide

complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). In another alternative, the polynucleotide comprises at least 60 contiguous nucleotides of a polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEO ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide comprising a polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). The invention further provides a composition for the detection of expression of disease detection and treatment molecule polynucleotides comprising at least one isolated polynucleotide comprising a polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d); and a detectable label.

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The invention also provides a method for detecting a target polynucleotide in a sample, said target polynucleotide having a polynucleotide sequence of a polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence of a polynucleotide selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). The method comprises a) amplifying said target polynucleotide or fragment thereof using polymerase chain reaction amplification, and b) detecting the presence or absence of said amplified target polynucleotide or fragment thereof, and, optionally, if present, the amount thereof.

The invention also provides a method for detecting a target polynucleotide in a sample, said target polynucleotide having a polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). The method comprises a) hybridizing the sample with a probe comprising at least 20 contiguous nucleotides comprising a sequence complementary to said target polynucleotide in the sample, and which probe specifically hybridizes to said target

polynucleotide, under conditions whereby a hybridization complex is formed between said probe and said target polynucleotide, and b) detecting the presence or absence of said hybridization complex, and, optionally, if present, the amount thereof. In one alternative, the invention provides a composition comprising a target polynucleotide of the method, wherein said probe comprises at least 30 contiguous nucleotides. In one alternative, the invention provides a composition comprising a target polynucleotide of the method, wherein said probe comprises at least 60 contiguous nucleotides.

The invention further provides a recombinant polynucleotide comprising a promoter sequence operably linked to an isolated polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). In one alternative, the invention provides a cell transformed with the recombinant polynucleotide. In another alternative, the invention provides a transgenic organism comprising the recombinant polynucleotide.

The invention also provides a method for producing a disease detection and treatment molecule polypeptide, the method comprising a) culturing a cell under conditions suitable for expression of the disease detection and treatment molecule polypeptide, wherein said cell is transformed with a recombinant polynucleotide, said recombinant polynucleotide comprising an isolated polynucleotide selected from the group consisting of i) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; ii) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; iii) a polynucleotide complementary to the polynucleotide of i); iv) a polynucleotide complementary to the polynucleotide of ii); and v) an RNA equivalent of i) through iv), and b) recovering the disease detection and treatment molecule polypeptide so expressed. The invention additionally provides a method wherein the polypeptide has an amino acid sequence selected from the group consisting of SEQ ID NO:397-792pp range - upper pp range].

The invention also provides an isolated disease detection and treatment molecule polypeptide (MDDT) encoded by at least one polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396. The invention further provides a method of screening for a test compound that specifically binds to the polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. The method comprises a) combining the polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792 with at least one test compound under suitable conditions, and b) detecting binding of the polypeptide having

an amino acid sequence selected from the group consisting of SEQ ID NO:397-792 to the test compound, thereby identifying a compound that specifically binds to the polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792.

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The invention further provides a microarray wherein at least one element of the microarray is an isolated polynucleotide comprising at least 30 contiguous nucleotides of a polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). The invention also provides a method for generating a transcript image of a sample which contains polynucleotides. The method comprises a) labeling the polynucleotides of the sample, b) contacting the elements of the microarray with the labeled polynucleotides of the sample under conditions suitable for the formation of a hybridization complex, and c) quantifying the expression of the polynucleotides in the sample.

Additionally, the invention provides a method for screening a compound for effectiveness in altering expression of a target polynucleotide, wherein said target polynucleotide comprises a polynucleotide selected from the group consisting of a) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; b) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; c) a polynucleotide complementary to the polynucleotide of a); d) a polynucleotide complementary to the polynucleotide of b); and e) an RNA equivalent of a) through d). The method comprises a) exposing a sample comprising the target polynucleotide to a compound, b) detecting altered expression of the target polynucleotide, and c) comparing the expression of the target polynucleotide in the presence of varying amounts of the compound and in the absence of the compound.

The invention further provides a method for assessing toxicity of a test compound, said method comprising a) treating a biological sample containing nucleic acids with the test compound; b) hybridizing the nucleic acids of the treated biological sample with a probe comprising at least 20 contiguous nucleotides of a polynucleotide selected from the group consisting of i) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; ii) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; iii) a polynucleotide complementary to the polynucleotide of i); iv) a polynucleotide complementary to the polynucleotide of i); hrough iv). Hybridization occurs under conditions whereby a

specific hybridization complex is formed between said probe and a target polynucleotide in the biological sample, said target polynucleotide comprising a polynucleotide sequence of a polynucleotide selected from the group consisting of i) a polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; ii) a polynucleotide comprising a naturally occurring polynucleotide sequence at least 90% identical to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396; iii) a polynucleotide complementary to the polynucleotide of i); iv) a polynucleotide complementary to the polynucleotide of ii); and v) an RNA equivalent of i) through iv), and alternatively, the target polynucleotide comprises a polynucleotide sequence of a fragment of a polynucleotide selected from the group consisting of i-v above; c) quantifying the amount of hybridization complex; and d) comparing the amount of hybridization complex in the treated biological sample with the amount of hybridization complex in an untreated biological sample, wherein a difference in the amount of hybridization complex in the treated biological sample is indicative of toxicity of the test compound.

The invention further provides an isolated polypeptide selected from the group consisting of a) a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, b) a polypeptide comprising a naturally occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, c) a biologically active fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and d) an immunogenic fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. In one alternative, the invention provides an isolated polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792.

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The invention further provides an isolated polynucleotide encoding a polypeptide selected from the group consisting of a) a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, b) a polypeptide comprising a naturally occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, c) a biologically active fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and d) an immunogenic fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. In one alternative, the polynucleotide encodes a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. In another alternative, the polynucleotide comprises a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396.

Additionally, the invention provides an isolated antibody which specifically binds to a polypeptide selected from the group consisting of a) a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, b) a polypeptide comprising a naturally

occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, c) a biologically active fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and d) an immunogenic fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792.

The invention further provides a composition comprising a polypeptide selected from the group consisting of a) a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, b) a polypeptide comprising a naturally occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, c) a biologically active fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and d) an immunogenic fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and a pharmaceutically acceptable excipient. In one embodiment, the composition comprises a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. The invention additionally provides a method of treating a disease or condition associated with decreased expression of functional MDDT, comprising administering to a patient in need of such treatment the composition.

The invention also provides a method for screening a compound for effectiveness as an agonist of a polypeptide selected from the group consisting of a) a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, b) a polypeptide comprising a naturally occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, c) a biologically active fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and d) an immunogenic fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. The method comprises a) exposing a sample comprising the polypeptide to a compound, and b) detecting agonist activity in the sample. In one alternative, the invention provides a composition comprising an agonist compound identified by the method and a pharmaceutically acceptable excipient. In another alternative, the invention provides a method of treating a disease or condition associated with decreased expression of functional MDDT, comprising administering to a patient in need of such treatment the composition.

Additionally, the invention provides a method for screening a compound for effectiveness as an antagonist of a polypeptide selected from the group consisting of a) a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, b) a polypeptide comprising a naturally occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, c) a biologically active fragment

of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and d) an immunogenic fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. The method comprises a) exposing a sample comprising the polypeptide to a compound, and b) detecting antagonist activity in the sample. In one alternative, the invention provides a composition comprising an antagonist compound identified by the method and a pharmaceutically acceptable excipient. In another alternative, the invention provides a method of treating a disease or condition associated with overexpression of functional MDDT, comprising administering to a patient in need of such treatment the composition.

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The invention further provides a method of screening for a compound that modulates the activity of a polypeptide selected from the group consisting of a) a polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, b) a polypeptide comprising a naturally occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, c) a biologically active fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and d) an immunogenic fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:397-792. The method comprises a) combining the polypeptide with at least one test compound under conditions permissive for the activity of the polypeptide, b) assessing the activity of the polypeptide in the presence of the test compound, and c) comparing the activity of the polypeptide in the absence of the test compound, wherein a change in the activity of the polypeptide in the presence of the test compound is indicative of a compound that modulates the activity of the polypeptide.

DESCRIPTION OF THE TABLES

Table 1 shows the sequence identification numbers (SEQ ID NO:s) and template identification numbers (template IDs) corresponding to the polynucleotides of the present invention, along with the sequence identification numbers (SEQ ID NO:s) and open reading frame identification numbers (ORF IDs) corresponding to polypeptides encoded by the template ID.

Table 2 shows the sequence identification numbers (SEQ ID NO:s) and template identification numbers (template IDs) corresponding to the polynucleotides of the present invention, along with their GenBank hits (GI Numbers), probability scores, and functional annotations corresponding to the GenBank hits.

Table 3 shows the sequence identification numbers (SEQ ID NO:s) and template identification numbers (template IDs) corresponding to the polynucleotides of the present invention, along with polynucleotide segments of each template sequence as defined by the indicated "start" and "stop" nucleotide positions. The reading frames of the polynucleotide segments and the Pfam hits, Pfam

descriptions, and E-values corresponding to the polypeptide domains encoded by the polynucleotide segments are indicated.

Table 4 shows the sequence identification numbers (SEQ ID NO:s) and template identification numbers (template IDs) corresponding to the polynucleotides of the present invention, along with polynucleotide segments of each template sequence as defined by the indicated "start" and "stop" nucleotide positions. The reading frames of the polynucleotide segments are shown, and the polypeptides encoded by the polynucleotide segments constitute either signal peptide (SP) or transmembrane (TM) domains, as indicated. For TM domains, the membrane topology of the encoded polypeptide sequence is indicated as being transmembrane or on the cytosolic or non-cytosolic side of the cell membrane or organelle.

Table 5 shows the sequence identification numbers and template identification numbers (/template IDs) corresponding to the polynucleotides of the present invention, along with component sequence identification spans corresponding to each template. The component sequences, which were used to assemble the template sequences, are defined by the spans indicating the nucleotide positions along each template.

Table 6 shows the tissue distribution profiles for the templates of the invention.

Table 7 shows the sequence identification numbers (SEQ ID NO:s) corresponding to the polypeptides of the present invention, along with the reading frames used to obtain the polypeptide segments, the lengths of the polypeptide segments, the "start" and "stop" nucleotide positions of the polynucleotide sequences used to define the encoded polypeptide segments, the GenBank hits (GI Numbers), probability scores, and functional annotations corresponding to the GenBank hits.

Table 8 summarizes the bioinformatics tools which are useful for analysis of the polynucleotides of the present invention. The first column of Table 8 lists analytical tools, programs, and algorithms, the second column provides brief descriptions thereof, the third column presents appropriate references, all of which are incorporated by reference herein in their entirety, and the fourth column presents, where applicable, the scores, probability values, and other parameters used to evaluate the strength of a match between two sequences (the higher the score, the greater the homology between two sequences).

DETAILED DESCRIPTION OF THE INVENTION

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Before the nucleic acid sequences and methods are presented, it is to be understood that this invention is not limited to the particular machines, methods, and materials described. Although particular embodiments are described, machines, methods, and materials similar or equivalent to these embodiments may be used to practice the invention. The preferred machines, methods, and materials

set forth are not intended to limit the scope of the invention which is limited only by the appended claims.

The singular forms "a", "an", and "the" include plural reference unless the context clearly dictates otherwise. All technical and scientific terms have the meanings commonly understood by one of ordinary skill in the art. All publications are incorporated by reference for the purpose of describing and disclosing the cell lines, vectors, and methodologies which are presented and which might be used in connection with the invention. Nothing in the specification is to be construed as an admission that the invention is not entitled to antedate such disclosure by virtue of prior invention.

10 Definitions

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As used herein, the lower case "mddt" refers to a nucleic acid sequence, while the upper case "MDDT" refers to an amino acid sequence encoded by mddt. A "full-length" mddt refers to a nucleic acid sequence containing the entire coding region of a gene endogenously expressed in human tissue.

"Adjuvants" are materials such as Freund's adjuvant, mineral gels (aluminum hydroxide), and surface active substances (lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, keyhole limpet hemocyanin, and dinitrophenol) which may be administered to increase a host's immunological response.

"Allele" refers to an alternative form of a nucleic acid sequence. Alleles result from a "mutation," a change or an alternative reading of the genetic code. Any given gene may have none, one, or many allelic forms. Mutations which give rise to alleles include deletions, additions, or substitutions of nucleotides. Each of these changes may occur alone, or in combination with the others, one or more times in a given nucleic acid sequence. The present invention encompasses allelic mddt.

An "allelic variant" is an alternative form of the gene encoding MDDT. Allelic variants may result from at least one mutation in the nucleic acid sequence and may result in altered mRNAs or in polypeptides whose structure or function may or may not be altered. A gene may have none, one, or many allelic variants of its naturally occurring form. Common mutational changes which give rise to allelic variants are generally ascribed to natural deletions, additions, or substitutions of nucleotides. Each of these types of changes may occur alone, or in combination with the others, one or more times in a given sequence.

"Altered" nucleic acid sequences encoding MDDT include those sequences with deletions, insertions, or substitutions of different nucleotides, resulting in a polypeptide the same as MDDT or a polypeptide with at least one functional characteristic of MDDT. Included within this definition are polymorphisms which may or may not be readily detectable using a particular oligonucleotide probe of the polynucleotide encoding MDDT, and improper or unexpected hybridization to allelic variants, with

a locus other than the normal chromosomal locus for the polynucleotide sequence encoding MDDT. The encoded protein may also be "altered," and may contain deletions, insertions, or substitutions of amino acid residues which produce a silent change and result in a functionally equivalent MDDT. Deliberate amino acid substitutions may be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity, and/or the amphipathic nature of the residues, as long as the biological or immunological activity of MDDT is retained. For example, negatively charged amino acids may include aspartic acid and glutamic acid, and positively charged amino acids may include lysine and arginine. Amino acids with uncharged polar side chains having similar hydrophilicity values may include: asparagine and glutamine; and serine and threonine. Amino acids with uncharged side chains having similar hydrophilicity values may include: leucine, isoleucine, and valine; glycine and alanine; and phenylalanine and tyrosine.

"Amino acid sequence" refers to a peptide, a polypeptide, or a protein of either natural or synthetic origin. The amino acid sequence is not limited to the complete, endogenous amino acid sequence and may be a fragment, epitope, variant, or derivative of a protein expressed by a nucleic acid sequence.

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"Amplification" refers to the production of additional copies of a sequence and is carried out using polymerase chain reaction (PCR) technologies well known in the art.

"Antibody" refers to intact molecules as well as to fragments thereof, such as Fab, F(ab')₂, and Fv fragments, which are capable of binding the epitopic determinant. Antibodies that bind MDDT polypeptides can be prepared using intact polypeptides or using fragments containing small peptides of interest as the immunizing antigen. The polypeptide or peptide used to immunize an animal (e.g., a mouse, a rat, or a rabbit) can be derived from the translation of RNA, or synthesized chemically, and can be conjugated to a carrier protein if desired. Commonly used carriers that are chemically coupled to peptides include bovine serum albumin, thyroglobulin, and keyhole limpet hemocyanin (KLH). The coupled peptide is then used to immunize the animal.

The term "aptamer" refers to a nucleic acid or oligonucleotide molecule that binds to a specific molecular target. Aptamers are derived from an in vitro evolutionary process (e.g., SELEX (Systematic Evolution of Ligands by EXponential Enrichment), described in U.S. Patent No. 5,270,163), which selects for target-specific aptamer sequences from large combinatorial libraries.

Aptamer compositions may be double-stranded or single-stranded, and may include deoxyribonucleotides, ribonucleotides, nucleotide derivatives, or other nucleotide-like molecules. The nucleotide components of an aptamer may have modified sugar groups (e.g., the 2'-OH group of a ribonucleotide may be replaced by 2'-F or 2'-NH₂), which may improve a desired property, e.g., resistance to nucleases or longer lifetime in blood. Aptamers may be conjugated to other molecules, e.g., a high molecular weight carrier to slow clearance of the aptamer from the circulatory system.

Aptamers may be specifically cross-linked to their cognate ligands, e.g., by photo-activation of a cross-linker. (See, e.g., Brody, E.N. and L. Gold (2000) J. Biotechnol. 74:5-13.)

The term "intramer" refers to an aptamer which is expressed <u>in vivo</u>. For example, a vaccinia virus-based RNA expression system has been used to express specific RNA aptamers at high levels in the cytoplasm of leukocytes (Blind, M. et al. (1999) Proc. Natl Acad. Sci. USA 96:3606-3610).

The term "spiegelmer" refers to an aptamer which includes L-DNA, L-RNA, or other left-handed nucleotide derivatives or nucleotide-like molecules. Aptamers containing left-handed nucleotides are resistant to degradation by naturally occurring enzymes, which normally act on substrates containing right-handed nucleotides.

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"Antisense sequence" refers to a sequence capable of specifically hybridizing to a target sequence. The antisense sequence may include DNA, RNA, or any nucleic acid mimic or analog such as peptide nucleic acid (PNA); oligonucleotides having modified backbone linkages such as phosphorothioates, methylphosphonates, or benzylphosphonates; oligonucleotides having modified sugar groups such as 2'-methoxyethyl sugars or 2'-methoxyethoxy sugars; or oligonucleotides having modified bases such as 5-methyl cytosine, 2'-deoxyuracil, or 7-deaza-2'-deoxyguanosine.

"Antisense technology" refers to any technology which relies on the specific hybridization of an antisense sequence to a target sequence.

A "bin" is a portion of computer memory space used by a computer program for storage of data, and bounded in such a manner that data stored in a bin may be retrieved by the program.

"Biologically active" refers to an amino acid sequence having a structural, regulatory, or biochemical function of a naturally occurring amino acid sequence.

"Clone joining" is a process for combining gene bins based upon the bins' containing sequence information from the same clone. The sequences may assemble into a primary gene transcript as well as one or more splice variants.

"Complementary" describes the relationship between two single-stranded nucleic acid sequences that annual by base-pairing (5'-A-G-T-3' pairs with its complement 3'-T-C-A-5').

A "component sequence" is a nucleic acid sequence selected by a computer program such as PHRED and used to assemble a consensus or template sequence from one or more component sequences.

A "consensus sequence" or "template sequence" is a nucleic acid sequence which has been assembled from overlapping sequences, using a computer program for fragment assembly such as the GELVIEW fragment assembly system (Genetics Computer Group (GCG), Madison WI) or using a relational database management system (RDMS).

"Conservative amino acid substitutions" are those substitutions that, when made, least interfere with the properties of the original protein, i.e., the structure and especially the function of the

protein is conserved and not significantly changed by such substitutions. The table below shows amino acids which may be substituted for an original amino acid in a protein and which are regarded as conservative substitutions.

5	Original Residue	Conservative Substitution
	Ala	Gly, Ser
	Arg	His, Lys
	Asn	Asp, Gln, His
	Asp	Asn, Glu
10	Cys	Ala, Ser
	Gln	Asn, Glu, His
	Glu	Asp, Gln, His
	Gly	Ala
	His	Asn, Arg, Gln, Glu
15	Ile	Leu, Val
	Leu	Ile, Val
	Lys	Arg, Gln, Glu
	Met	Leu, Ile
	Phe	His, Met, Leu, Trp, Tyr
20	Ser	Cys, Thr
	Thr	Ser, Val
	Тгр	Phe, Tyr
	Тут	His, Phe, Trp
	Val	Ile, Leu, Thr
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Conservative substitutions generally maintain (a) the structure of the polypeptide backbone in the area of the substitution, for example, as a beta sheet or alpha helical conformation, (b) the charge or hydrophobicity of the molecule at the target site, or (c) the bulk of the side chain.

"Deletion" refers to a change in either a nucleic or amino acid sequence in which at least one nucleotide or amino acid residue, respectively, is absent.

"Derivative" refers to the chemical modification of a nucleic acid sequence, such as by replacement of hydrogen by an alkyl, acyl, amino, hydroxyl, or other group.

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"Differential expression" refers to increased or upregulated; or decreased, downregulated, or absent gene or protein expression, determined by comparing at least two different samples. Such comparisons may be carried out between, for example, a treated and an untreated sample, or a diseased and a normal sample.

The terms "element" and "array element" refer to a polynucleotide, polypeptide, or other chemical compound having a unique and defined position on a microarray.

The term "modulate" refers to a change in the activity of MDDT. For example, modulation may cause an increase or a decrease in protein activity, binding characteristics, or any other biological, functional, or immunological properties of MDDT.

"E-value" refers to the statistical probability that a match between two sequences occurred by chance.

"Exon shuffling" refers to the recombination of different coding regions (exons). Since an exon may represent a structural or functional domain of the encoded protein, new proteins may be assembled through the novel reassortment of stable substructures, thus allowing acceleration of the evolution of new protein functions.

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A "fragment" is a unique portion of mddt or MDDT which is identical in sequence to but shorter in length than the parent sequence. A fragment may comprise up to the entire length of the defined sequence, minus one nucleotide/amino acid residue. For example, a fragment may comprise from 10 to 1000 contiguous amino acid residues or nucleotides. A fragment used as a probe, primer, antigen, therapeutic molecule, or for other purposes, may be at least 5, 10, 15, 16, 20, 25, 30, 40, 50, 60, 75, 100, 150, 250 or at least 500 contiguous amino acid residues or nucleotides in length. Fragments may be preferentially selected from certain regions of a molecule. For example, a polypeptide fragment may comprise a certain length of contiguous amino acids selected from the first 250 or 500 amino acids (or first 25% or 50%) of a polypeptide as shown in a certain defined sequence. Clearly these lengths are exemplary, and any length that is supported by the specification, including the Sequence Listing and the figures, may be encompassed by the present embodiments.

A fragment of mddt comprises a region of unique polynucleotide sequence that specifically identifies mddt, for example, as distinct from any other sequence in the same genome. A fragment of mddt is useful, for example, in hybridization and amplification technologies and in analogous methods that distinguish mddt from related polynucleotide sequences. The precise length of a fragment of mddt and the region of mddt to which the fragment corresponds are routinely determinable by one of ordinary skill in the art based on the intended purpose for the fragment.

A fragment of MDDT is encoded by a fragment of mddt. A fragment of MDDT comprises a region of unique amino acid sequence that specifically identifies MDDT. For example, a fragment of MDDT is useful as an immunogenic peptide for the development of antibodies that specifically recognize MDDT. The precise length of a fragment of MDDT and the region of MDDT to which the fragment corresponds are routinely determinable by one of ordinary skill in the art based on the intended purpose for the fragment.

A "full length" nucleotide sequence is one containing at least a start site for translation to a protein sequence, followed by an open reading frame and a stop site, and encoding a "full length" polypeptide.

"Hit" refers to a sequence whose annotation will be used to describe a given template.

Criteria for selecting the top hit are as follows: if the template has one or more exact nucleic acid matches, the top hit is the exact match with highest percent identity. If the template has no exact matches but has significant protein hits, the top hit is the protein hit with the lowest E-value. If the template has no significant protein hits, but does have significant non-exact nucleotide hits, the top hit is the nucleotide hit with the lowest E-value.

"Homology" refers to sequence similarity either between a reference nucleic acid sequence and at least a fragment of an mddt or between a reference amino acid sequence and a fragment of an MDDT.

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"Hybridization" refers to the process by which a strand of nucleotides anneals with a complementary strand through base pairing. Specific hybridization is an indication that two nucleic acid sequences share a high degree of identity. Specific hybridization complexes form under defined annealing conditions, and remain hybridized after the "washing" step. The defined hybridization conditions include the annealing conditions and the washing step(s), the latter of which is particularly important in determining the stringency of the hybridization process, with more stringent conditions allowing less non-specific binding, i.e., binding between pairs of nucleic acid probes that are not perfectly matched. Permissive conditions for annealing of nucleic acid sequences are routinely determinable and may be consistent among hybridization experiments, whereas wash conditions may be varied among experiments to achieve the desired stringency.

Generally, stringency of hybridization is expressed with reference to the temperature under which the wash step is carried out. Generally, such wash temperatures are selected to be about 5°C to 20°C lower than the thermal melting point (T_m) for the specific sequence at a defined ionic strength and pH. The T_m is the temperature (under defined ionic strength and pH) at which 50% of the target sequence hybridizes to a perfectly matched probe. An equation for calculating T_m and conditions for nucleic acid hybridization is well known and can be found in Sambrook et al., 1989, Molecular Cloning: A Laboratory Manual, 2nd ed., vol. 1-3, Cold Spring Harbor Press, Plainview NY; specifically see volume 2, chapter 9.

High stringency conditions for hybridization between polynucleotides of the present invention include wash conditions of 68°C in the presence of about 0.2 x SSC and about 0.1% SDS, for 1 hour. Alternatively, temperatures of about 65°C, 60°C, or 55°C may be used. SSC concentration may be varied from about 0.2 to 2 x SSC, with SDS being present at about 0.1%. Typically, blocking reagents are used to block non-specific hybridization. Such blocking reagents include, for instance, denatured salmon sperm DNA at about 100-200 μ g/ml. Useful variations on these conditions will be readily apparent to those skilled in the art. Hybridization, particularly under high stringency conditions, may be suggestive of evolutionary similarity between the nucleotides. Such similarity is strongly indicative of a

similar role for the nucleotides and their resultant proteins.

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Other parameters, such as temperature, salt concentration, and detergent concentration may be varied to achieve the desired stringency. Denaturants, such as formamide at a concentration of about 35-50% v/v, may also be used under particular circumstances, such as RNA:DNA hybridizations. Appropriate hybridization conditions are routinely determinable by one of ordinary skill in the art.

"Immunologically active" or "immunogenic" describes the potential for a natural, recombinant, or synthetic peptide, epitope, polypeptide, or protein to induce antibody production in appropriate animals, cells, or cell lines.

"Immune response" can refer to conditions associated with inflammation, trauma, immune disorders, or infectious or genetic disease, etc. These conditions can be characterized by expression of various factors, e.g., cytokines, chemokines, and other signaling molecules, which may affect cellular and systemic defense systems.

An "immunogenic fragment" is a polypeptide or oligopeptide fragment of ABBR which is capable of eliciting an immune response when introduced into a living organism, for example, a mammal. The term "immunogenic fragment" also includes any polypeptide or oligopeptide fragment of ABBR which is useful in any of the antibody production methods disclosed herein or known in the art.

"Insertion" or "addition" refers to a change in either a nucleic or amino acid sequence in which at least one nucleotide or residue, respectively, is added to the sequence.

"Labeling" refers to the covalent or noncovalent joining of a polynucleotide, polypeptide, or antibody with a reporter molecule capable of producing a detectable or measurable signal.

"Microarray" is any arrangement of nucleic acids, amino acids, antibodies, etc., on a substrate. The substrate may be a solid support such as beads, glass, paper, nitrocellulose, nylon, or an appropriate membrane.

"Linkers" are short stretches of nucleotide sequence which may be added to a vector or an mddt to create restriction endonuclease sites to facilitate cloning. "Polylinkers" are engineered to incorporate multiple restriction enzyme sites and to provide for the use of enzymes which leave 5' or 3' overhangs (e.g., BamHI, EcoRI, and HindIII) and those which provide blunt ends (e.g., EcoRV, SnaBI, and StuI).

"Naturally occurring" refers to an endogenous polynucleotide or polypeptide that may be isolated from viruses or prokaryotic or eukaryotic cells.

"Nucleic acid sequence" refers to the specific order of nucleotides joined by phosphodiester bonds in a linear, polymeric arrangement. Depending on the number of nucleotides, the nucleic acid sequence can be considered an oligomer, oligonucleotide, or polynucleotide. The nucleic acid can be

DNA, RNA, or any nucleic acid analog, such as PNA, may be of genomic or synthetic origin, may be either double-stranded or single-stranded, and can represent either the sense or antisense (complementary) strand.

"Oligomer" refers to a nucleic acid sequence of at least about 6 nucleotides and as many as about 60 nucleotides, preferably about 15 to 40 nucleotides, and most preferably between about 20 and 30 nucleotides, that may be used in hybridization or amplification technologies. Oligomers may be used as, e.g., primers for PCR, and are usually chemically synthesized.

"Operably linked" refers to the situation in which a first nucleic acid sequence is placed in a functional relationship with the second nucleic acid sequence. For instance, a promoter is operably linked to a coding sequence if the promoter affects the transcription or expression of the coding sequence. Generally, operably linked DNA sequences may be in close proximity or contiguous and, where necessary to join two protein coding regions, in the same reading frame.

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"Peptide nucleic acid" (PNA) refers to a DNA mimic in which nucleotide bases are attached to a pseudopeptide backbone to increase stability. PNAs, also designated antigene agents, can prevent gene expression by targeting complementary messenger RNA.

The phrases "percent identity" and "% identity", as applied to polynucleotide sequences, refer to the percentage of residue matches between at least two polynucleotide sequences aligned using a standardized algorithm. Such an algorithm may insert, in a standardized and reproducible way, gaps in the sequences being compared in order to optimize alignment between two sequences, and therefore achieve a more meaningful comparison of the two sequences.

Percent identity between polynucleotide sequences may be determined using the default parameters of the CLUSTAL V algorithm as incorporated into the MEGALIGN version 3.12e sequence alignment program. This program is part of the LASERGENE software package, a suite of molecular biological analysis programs (DNASTAR, Madison WI). CLUSTAL V is described in Higgins, D.G. and Sharp, P.M. (1989) CABIOS 5:151-153 and in Higgins, D.G. et al. (1992) CABIOS 8:189-191. For pairwise alignments of polynucleotide sequences, the default parameters are set as follows: Ktuple=2, gap penalty=5, window=4, and "diagonals saved"=4. The "weighted" residue weight table is selected as the default. Percent identity is reported by CLUSTAL V as the "percent similarity" between aligned polynucleotide sequence pairs.

Alternatively, a suite of commonly used and freely available sequence comparison algorithms is provided by the National Center for Biotechnology Information (NCBI) Basic Local Alignment Search Tool (BLAST) (Altschul, S.F. et al. (1990) J. Mol. Biol. 215:403-410), which is available from several sources, including the NCBI, Bethesda, MD, and on the Internet at http://www.ncbi.nlm.nih.gov/BLAST/. The BLAST software suite includes various sequence analysis programs including "BLASTN," that is used to determine alignment between a known polynucleotide

sequence and other sequences on a variety of databases. Also available is a tool called "BLAST 2 Sequences" that is used for direct pairwise comparison of two nucleotide sequences. "BLAST 2 Sequences" can be accessed and used interactively at http://www.ncbi.nlm.nih.gov/gorf/bl2/. The "BLAST 2 Sequences" tool can be used for both BLASTN and BLASTP (discussed below).

BLAST programs are commonly used with gap and other parameters set to default settings. For example, to compare two nucleotide sequences, one may use BLASTN with the "BLAST 2 Sequences" tool Version 2.0.9 (May-07-1999) set at default parameters. Such default parameters may be, for example:

Matrix: BLOSUM62

10 Reward for match: 1

Penalty for mismatch: -2

Open Gap: 5 and Extension Gap: 2 penalties

Gap x drop-off: 50

Expect: 10

Word Size: 11

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Filter: on

Percent identity may be measured over the length of an entire defined sequence, for example, as defined by a particular SEQ ID number, or may be measured over a shorter length, for example, over the length of a fragment taken from a larger, defined sequence, for instance, a fragment of at least 20, at least 30, at least 40, at least 50, at least 70, at least 100, or at least 200 contiguous nucleotides. Such lengths are exemplary only, and it is understood that any fragment length supported by the sequences shown herein, in figures or Sequence Listings, may be used to describe a length over which percentage identity may be measured.

Nucleic acid sequences that do not show a high degree of identity may nevertheless encode similar amino acid sequences due to the degeneracy of the genetic code. It is understood that changes in nucleic acid sequence can be made using this degeneracy to produce multiple nucleic acid sequences that all encode substantially the same protein.

The phrases "percent identity" and "% identity", as applied to polypeptide sequences, refer to the percentage of residue matches between at least two polypeptide sequences aligned using a standardized algorithm. Methods of polypeptide sequence alignment are well-known. Some alignment methods take into account conservative amino acid substitutions. Such conservative substitutions, explained in more detail above, generally preserve the hydrophobicity and acidity of the substituted residue, thus preserving the structure (and therefore function) of the folded polypeptide.

Percent identity between polypeptide sequences may be determined using the default parameters of the CLUSTAL V algorithm as incorporated into the MEGALIGN version 3.12e

sequence alignment program (described and referenced above). For pairwise alignments of polypeptide sequences using CLUSTAL V, the default parameters are set as follows: Ktuple=1, gap penalty=3, window=5, and "diagonals saved"=5. The PAM250 matrix is selected as the default residue weight table. As with polynucleotide alignments, the percent identity is reported by CLUSTAL V as the "percent similarity" between aligned polypeptide sequence pairs.

Alternatively the NCBI BLAST software suite may be used. For example, for a pairwise comparison of two polypeptide sequences, one may use the "BLAST 2 Sequences" tool Version 2.0.9 (May-07-1999) with BLASTP set at default parameters. Such default parameters may be, for example:

10 Matrix: BLOSUM62

Open Gap: 11 and Extension Gap: 1 penalty

Gap x drop-off: 50

Expect: 10

Word Size: 3

Filter: on

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Percent identity may be measured over the length of an entire defined polypeptide sequence, for example, as defined by a particular SEQ ID number, or may be measured over a shorter length, for example, over the length of a fragment taken from a larger, defined polypeptide sequence, for instance, a fragment of at least 15, at least 20, at least 30, at least 40, at least 50, at least 70 or at least 150 contiguous residues. Such lengths are exemplary only, and it is understood that any fragment length supported by the sequences shown herein, in figures or Sequence Listings, may be used to describe a length over which percentage identity may be measured.

"Post-translational modification" of an MDDT may involve lipidation, glycosylation, phosphorylation, acetylation, racemization, proteolytic cleavage, and other modifications known in the art. These processes may occur synthetically or biochemically. Biochemical modifications will vary by cell type depending on the enzymatic milieu and the MDDT.

"Probe" refers to mddt or fragments thereof, which are used to detect identical, allelic or related nucleic acid sequences. Probes are isolated oligonucleotides or polynucleotides attached to a detectable label or reporter molecule. Typical labels include radioactive isotopes, ligands, chemiluminescent agents, and enzymes. "Primers" are short nucleic acids, usually DNA oligonucleotides, which may be annealed to a target polynucleotide by complementary base-pairing. The primer may then be extended along the target DNA strand by a DNA polymerase enzyme. Primer pairs can be used for amplification (and identification) of a nucleic acid sequence, e.g., by the polymerase chain reaction (PCR).

Probes and primers as used in the present invention typically comprise at least 15 contiguous

nucleotides of a known sequence. In order to enhance specificity, longer probes and primers may also be employed, such as probes and primers that comprise at least 20, 30, 40, 50, 60, 70, 80, 90, 100, or at least 150 consecutive nucleotides of the disclosed nucleic acid sequences. Probes and primers may be considerably longer than these examples, and it is understood that any length supported by the specification, including the figures and Sequence Listing, may be used.

Methods for preparing and using probes and primers are described in the references, for example Sambrook et al., 1989, Molecular Cloning: A Laboratory Manual, 2nd ed., vol. 1-3, Cold Spring Harbor Press, Plainview NY; Ausubel et al.,1987, Current Protocols in Molecular Biology, Greene Publ. Assoc. & Wiley-Intersciences, New York NY; Innis et al., 1990, PCR Protocols, A Guide to Methods and Applications, Academic Press, San Diego CA. PCR primer pairs can be derived from a known sequence, for example, by using computer programs intended for that purpose such as Primer (Version 0.5, 1991, Whitehead Institute for Biomedical Research, Cambridge MA).

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Oligonucleotides for use as primers are selected using software known in the art for such purpose. For example, OLIGO 4.06 software is useful for the selection of PCR primer pairs of up to 100 nucleotides each, and for the analysis of oligonucleotides and larger polynucleotides of up to 5,000 nucleotides from an input polynucleotide sequence of up to 32 kilobases. Similar primer selection programs have incorporated additional features for expanded capabilities. For example, the PrimOU primer selection program (available to the public from the Genome Center at University of Texas South West Medical Center, Dallas TX) is capable of choosing specific primers from megabase sequences and is thus useful for designing primers on a genome-wide scope. The Primer3 primer selection program (available to the public from the Whitehead Institute/MIT Center for Genome Research, Cambridge MA) allows the user to input a "mispriming library," in which sequences to avoid as primer binding sites are user-specified. Primer3 is useful, in particular, for the selection of oligonucleotides for microarrays. (The source code for the latter two primer selection programs may also be obtained from their respective sources and modified to meet the user's specific needs.) The PrimeGen program (available to the public from the UK Human Genome Mapping Project Resource Centre, Cambridge UK) designs primers based on multiple sequence alignments, thereby allowing selection of primers that hybridize to either the most conserved or least conserved regions of aligned nucleic acid sequences. Hence, this program is useful for identification of both unique and conserved oligonucleotides and polynucleotide fragments. The oligonucleotides and polynucleotide fragments identified by any of the above selection methods are useful in hybridization technologies, for example, as PCR or sequencing primers, microarray elements, or specific probes to identify fully or partially complementary polynucleotides in a sample of nucleic acids. Methods of oligonucleotide selection are not limited to those described above.

"Purified" refers to molecules, either polynucleotides or polypeptides that are isolated or

separated from their natural environment and are at least 60% free, preferably at least 75% free, and most preferably at least 90% free from other compounds with which they are naturally associated.

A "recombinant nucleic acid" is a sequence that is not naturally occurring or has a sequence that is made by an artificial combination of two or more otherwise separated segments of sequence. This artificial combination is often accomplished by chemical synthesis or, more commonly, by the artificial manipulation of isolated segments of nucleic acids, e.g., by genetic engineering techniques such as those described in Sambrook, <u>supra</u>. The term recombinant includes nucleic acids that have been altered solely by addition, substitution, or deletion of a portion of the nucleic acid. Frequently, a recombinant nucleic acid may include a nucleic acid sequence operably linked to a promoter sequence. Such a recombinant nucleic acid may be part of a vector that is used, for example, to transform a cell.

Alternatively, such recombinant nucleic acids may be part of a viral vector, e.g., based on a vaccinia virus, that could be use to vaccinate a mammal wherein the recombinant nucleic acid is expressed, inducing a protective immunological response in the mammal.

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"Regulatory element" refers to a nucleic acid sequence from nontranslated regions of a gene, and includes enhancers, promoters, introns, and 3' untranslated regions, which interact with host proteins to carry out or regulate transcription or translation.

"Reporter" molecules are chemical or biochemical moieties used for labeling a nucleic acid, an amino acid, or an antibody. They include radionuclides; enzymes; fluorescent, chemiluminescent, or chromogenic agents; substrates; cofactors; inhibitors; magnetic particles; and other moieties known in the art.

An "RNA equivalent," in reference to a DNA sequence, is composed of the same linear sequence of nucleotides as the reference DNA sequence with the exception that all occurrences of the nitrogenous base thymine are replaced with uracil, and the sugar backbone is composed of ribose instead of deoxyribose.

"Sample" is used in its broadest sense. Samples may contain nucleic or amino acids, antibodies, or other materials, and may be derived from any source (e.g., bodily fluids including, but not limited to, saliva, blood, and urine; chromosome(s), organelles, or membranes isolated from a cell; genomic DNA, RNA, or cDNA in solution or bound to a substrate; and cleared cells or tissues or blots or imprints from such cells or tissues).

"Specific binding" or "specifically binding" refers to the interaction between a protein or peptide and its agonist, antibody, antagonist, or other binding partner. The interaction is dependent upon the presence of a particular structure of the protein, e.g., the antigenic determinant or epitope, recognized by the binding molecule. For example, if an antibody is specific for epitope "A," the presence of a polypeptide containing epitope A, or the presence of free unlabeled A, in a reaction

containing free labeled A and the antibody will reduce the amount of labeled A that binds to the antibody.

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"Substitution" refers to the replacement of at least one nucleotide or amino acid by a different nucleotide or amino acid.

"Substrate" refers to any suitable rigid or semi-rigid support including, e.g., membranes, filters, chips, slides, wafers, fibers, magnetic or nonmagnetic beads, gels, tubing, plates, polymers, microparticles or capillaries. The substrate can have a variety of surface forms, such as wells, trenches, pins, channels and pores, to which polynucleotides or polypeptides are bound.

A "transcript image" refers to the collective pattern of gene expression by a particular tissue or cell type under given conditions at a given time.

"Transformation" refers to a process by which exogenous DNA enters a recipient cell.

Transformation may occur under natural or artificial conditions using various methods well known in the art. Transformation may rely on any known method for the insertion of foreign nucleic acid sequences into a prokaryotic or eukaryotic host cell. The method is selected based on the host cell being transformed.

"Transformants" include stably transformed cells in which the inserted DNA is capable of replication either as an autonomously replicating plasmid or as part of the host chromosome, as well as cells which transiently express inserted DNA or RNA.

A "transgenic organism," as used herein, is any organism, including but not limited to animals and plants, in which one or more of the cells of the organism contains heterologous nucleic acid introduced by way of human intervention, such as by transgenic techniques well known in the art. The nucleic acid is introduced into the cell, directly or indirectly by introduction into a precursor of the cell, by way of deliberate genetic manipulation, such as by microinjection or by infection with a recombinant virus. The term genetic manipulation does not include classical cross-breeding, or in vitro fertilization, but rather is directed to the introduction of a recombinant DNA molecule. The transgenic organisms contemplated in accordance with the present invention include bacteria, cyanobacteria, fungi, and plants and animals. The isolated DNA of the present invention can be introduced into the host by methods known in the art, for example infection, transfection, transformation or transconjugation. Techniques for transferring the DNA of the present invention into such organisms are widely known and provided in references such as Sambrook et al. (1989), supra.

A "variant" of a particular nucleic acid sequence is defined as a nucleic acid sequence having at least 25% sequence identity to the particular nucleic acid sequence over a certain length of one of the nucleic acid sequences using BLASTN with the "BLAST 2 Sequences" tool Version 2.0.9 (May-07-1999) set at default parameters. Such a pair of nucleic acids may show, for example, at least 30%, at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 91%, at least 92%, at

least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% or greater sequence identity over a certain defined length. The variant may result in "conservative" amino acid changes which do not affect structural and/or chemical properties. A variant may be described as, for example, an "allelic" (as defined above), "splice," "species," or "polymorphic" variant. A splice variant may have significant identity to a reference molecule, but will generally have a greater or lesser number of polynucleotides due to alternate splicing of exons during mRNA processing. The corresponding polypeptide may possess additional functional domains or lack domains that are present in the reference molecule. Species variants are polynucleotide sequences that vary from one species to another. The resulting polypeptides generally will have significant amino acid identity relative to each other. A polymorphic variant is a variation in the polynucleotide sequence of a particular gene between individuals of a given species. Polymorphic variants also may encompass "single nucleotide polymorphisms" (SNPs) in which the polynucleotide sequence varies by one base. The presence of SNPs may be indicative of, for example, a certain population, a disease state, or a propensity for a disease state.

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In an alternative, variants of the polynucleotides of the present invention may be generated through recombinant methods. One possible method is a DNA shuffling technique such as MOLECULARBREEDING (Maxygen Inc., Santa Clara CA; described in U.S. Patent Number 5,837,458; Chang, C.-C. et al. (1999) Nat. Biotechnol. 17:793-797; Christians, F.C. et al. (1999) Nat. Biotechnol. 17:259-264; and Crameri, A. et al. (1996) Nat. Biotechnol. 14:315-319) to alter or improve the biological properties of MDDT, such as its biological or enzymatic activity or its ability to bind to other molecules or compounds. DNA shuffling is a process by which a library of gene variants is produced using PCR-mediated recombination of gene fragments. The library is then subjected to selection or screening procedures that identify those gene variants with the desired properties. These preferred variants may then be pooled and further subjected to recursive rounds of DNA shuffling and selection/screening. Thus, genetic diversity is created through "artificial" breeding and rapid molecular evolution. For example, fragments of a single gene containing random point mutations may be recombined, screened, and then reshuffled until the desired properties are optimized. Alternatively. fragments of a given gene may be recombined with fragments of homologous genes in the same gene family, either from the same or different species, thereby maximizing the genetic diversity of multiple naturally occurring genes in a directed and controllable manner.

A "variant" of a particular polypeptide sequence is defined as a polypeptide sequence having at least 40% sequence identity to the particular polypeptide sequence over a certain length of one of the polypeptide sequences using BLASTP with the "BLAST 2 Sequences" tool Version 2.0.9 (May-07-1999) set at default parameters. Such a pair of polypeptides may show, for example, at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 91%, at least 92%, at least 93%, at

least 94%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% or greater sequence identity over a certain defined length of one of the polypeptides.

THE INVENTION

In a particular embodiment, cDNA sequences derived from human tissues and cell lines were aligned based on nucleotide sequence identity and assembled into "consensus" or "template" sequences which are designated by the template identification numbers (template IDs) in column 2 of Table 2. The sequence identification numbers (SEQ ID NO:s) corresponding to the template IDs are shown in column 1. The template sequences have similarity to GenBank sequences, or "hits," as designated by the GI Numbers in column 3. The statistical probability of each GenBank hit is indicated by a probability score in column 4, and the functional annotation corresponding to each GenBank hit is listed in column 5.

The invention incorporates the nucleic acid sequences of these templates as disclosed in the Sequence Listing and the use of these sequences in the diagnosis and treatment of disease states characterized by defects in disease detection and treatment molecules. The invention further utilizes these sequences in hybridization and amplification technologies, and in particular, in technologies which assess gene expression patterns correlated with specific cells or tissues and their responses in vivo or in vitro to pharmaceutical agents, toxins, and other treatments. In this manner, the sequences of the present invention are used to develop a transcript image for a particular cell or tissue.

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Derivation of Nucleic Acid Sequences

cDNA was isolated from libraries constructed using RNA derived from normal and diseased human tissues and cell lines. The human tissues and cell lines used for cDNA library construction were selected from a broad range of sources to provide a diverse population of cDNAs representative of gene transcription throughout the human body. Descriptions of the human tissues and cell lines used for cDNA library construction are provided in the LIFESEQ database (Incyte Genomics, Inc. (Incyte), Palo Alto CA). Human tissues were broadly selected from, for example, cardiovascular, dermatologic, endocrine, gastrointestinal, hematopoietic/immune system, musculoskeletal, neural, reproductive, and urologic sources.

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Cell lines used for cDNA library construction were derived from, for example, leukemic cells, teratocarcinomas, neuroepitheliomas, cervical carcinoma, lung fibroblasts, and endothelial cells. Such cell lines include, for example, THP-1, Jurkat, HUVEC, hNT2, WI38, HeLa, and other cell lines commonly used and available from public depositories (American Type Culture Collection, Manassas VA). Prior to mRNA isolation, cell lines were untreated, treated with a pharmaceutical agent such as

5'-aza-2'-deoxycytidine, treated with an activating agent such as lipopolysaccharide in the case of leukocytic cell lines, or, in the case of endothelial cell lines, subjected to shear stress.

Sequencing of the cDNAs

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Methods for DNA sequencing are well known in the art. Conventional enzymatic methods employ the Klenow fragment of DNA polymerase I, SEQUENASE DNA polymerase (U.S. Biochemical Corporation, Cleveland OH), Taq polymerase (Applied Biosystems, Foster City CA), thermostable T7 polymerase (Amersham Pharmacia Biotech, Inc. (Amersham Pharmacia Biotech), Piscataway NJ), or combinations of polymerases and proofreading exonucleases such as those found in the ELONGASE amplification system (Life Technologies Inc. (Life Technologies), Gaithersburg MD), to extend the nucleic acid sequence from an oligonucleotide primer annealed to the DNA template of interest. Methods have been developed for the use of both single-stranded and doublestranded templates. Chain termination reaction products may be electrophoresed on ureapolyacrylamide gels and detected either by autoradiography (for radioisotope-labeled nucleotides) or by fluorescence (for fluorophore-labeled nucleotides). Automated methods for mechanized reaction preparation, sequencing, and analysis using fluorescence detection methods have been developed. Machines used to prepare cDNAs for sequencing can include the MICROLAB 2200 liquid transfer system (Hamilton Company (Hamilton), Reno NV), Peltier thermal cycler (PTC200; MJ Research, Inc. (MJ Research), Watertown MA), and ABI CATALYST 800 thermal cycler (Applied Biosystems). Sequencing can be carried out using, for example, the ABI 373 or 377 (Applied Biosystems) or MEGABACE 1000 (Molecular Dynamics, Inc. (Molecular Dynamics), Sunnyvale CA) DNA sequencing systems, or other automated and manual sequencing systems well known in the art.

The nucleotide sequences of the Sequence Listing have been prepared by current, state-of-the-art, automated methods and, as such, may contain occasional sequencing errors or unidentified nucleotides. Such unidentified nucleotides are designated by an N. These infrequent unidentified bases do not represent a hindrance to practicing the invention for those skilled in the art. Several methods employing standard recombinant techniques may be used to correct errors and complete the missing sequence information. (See, e.g., those described in Ausubel, F.M. et al. (1997) Short Protocols in Molecular Biology, John Wiley & Sons, New York NY; and Sambrook, J. et al. (1989) Molecular Cloning, A Laboratory Manual, Cold Spring Harbor Press, Plainview NY.)

Assembly of cDNA Sequences

Human polynucleotide sequences may be assembled using programs or algorithms well known in the art. Sequences to be assembled are related, wholly or in part, and may be derived from a single

or many different transcripts. Assembly of the sequences can be performed using such programs as PHRAP (Phils Revised Assembly Program) and the GELVIEW fragment assembly system (GCG), or other methods known in the art.

Alternatively, cDNA sequences are used as "component" sequences that are assembled into "template" or "consensus" sequences as follows. Sequence chromatograms are processed, verified, and quality scores are obtained using PHRED. Raw sequences are edited using an editing pathway known as Block 1 (See, e.g., the LIFESEQ Assembled User Guide, Incyte Genomics, Palo Alto, CA). A series of BLAST comparisons is performed and low-information segments and repetitive elements (e.g., dinucleotide repeats, Alu repeats, etc.) are replaced by "n's", or masked, to prevent spurious matches. Mitochondrial and ribosomal RNA sequences are also removed. The processed sequences are then loaded into a relational database management system (RDMS) which assigns edited sequences to existing templates, if available. When additional sequences are added into the RDMS, a process is initiated which modifies existing templates or creates new templates from works in progress (i.e., nonfinal assembled sequences) containing queued sequences or the sequences themselves. After the new sequences have been assigned to templates, the templates can be merged into bins. If multiple templates exist in one bin, the bin can be split and the templates reannotated.

Once gene bins have been generated based upon sequence alignments, bins are "clone joined" based upon clone information. Clone joining occurs when the 5' sequence of one clone is present in one bin and the 3' sequence from the same clone is present in a different bin, indicating that the two bins should be merged into a single bin. Only bins which share at least two different clones are merged.

A resultant template sequence may contain either a partial or a full length open reading frame, or all or part of a genetic regulatory element. This variation is due in part to the fact that the full length cDNAs of many genes are several hundred, and sometimes several thousand, bases in length. With current technology, cDNAs comprising the coding regions of large genes cannot be cloned because of vector limitations, incomplete reverse transcription of the mRNA, or incomplete "second strand" synthesis. Template sequences may be extended to include additional contiguous sequences derived from the parent RNA transcript using a variety of methods known to those of skill in the art. Extension may thus be used to achieve the full length coding sequence of a gene.

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Analysis of the cDNA Sequences

The cDNA sequences are analyzed using a variety of programs and algorithms which are well known in the art. (See, e.g., Ausubel, 1997, <u>supra</u>, Chapter 7.7; Meyers, R.A. (Ed.) (1995)

<u>Molecular Biology and Biotechnology</u>, Wiley VCH, New York NY, pp. 856-853; and Table 8.) These analyses comprise both reading frame determinations, e.g., based on triplet codon periodicity for

particular organisms (Fickett, J.W. (1982) Nucleic Acids Res. 10:5303-5318); analyses of potential start and stop codons; and homology searches.

Computer programs known to those of skill in the art for performing computer-assisted searches for amino acid and nucleic acid sequence similarity, include, for example, Basic Local Alignment Search Tool (BLAST; Altschul, S.F. (1993) J. Mol. Evol. 36:290-300; Altschul, S.F. et al. (1990) J. Mol. Biol. 215:403-410). BLAST is especially useful in determining exact matches and comparing two sequence fragments of arbitrary but equal lengths, whose alignment is locally maximal and for which the alignment score meets or exceeds a threshold or cutoff score set by the user (Karlin, S. et al. (1988) Proc. Natl. Acad. Sci. USA 85:841-845). Using an appropriate search tool (e.g., BLAST or HMM), GenBank, SwissProt, BLOCKS, PFAM and other databases may be searched for sequences containing regions of homology to a query mddt or MDDT of the present invention.

Other approaches to the identification, assembly, storage, and display of nucleotide and polypeptide sequences are provided in "Relational Database for Storing Biomolecule Information," U.S.S.N. 08/947,845, filed October 9, 1997; "Project-Based Full-Length Biomolecular Sequence Database," U.S. Patent Number 5,953,727; and "Relational Database and System for Storing Information Relating to Biomolecular Sequences," U.S.S.N. 09/034,807, filed March 4, 1998, all of which are incorporated by reference herein in their entirety.

Protein hierarchies can be assigned to the putative encoded polypeptide based on, e.g., motif, BLAST, or biological analysis. Methods for assigning these hierarchies are described, for example, in "Database System Employing Protein Function Hierarchies for Viewing Biomolecular Sequence Data," U.S. Patent Number 6,023,659, incorporated herein by reference.

Human Disease Detection and Treatment Molecule Sequences

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The mddt of the present invention may be used for a variety of diagnostic and therapeutic purposes. For example, an mddt may be used to diagnose a particular condition, disease, or disorder associated with disease detection and treatment molecules. Such conditions, diseases, and disorders include, but are not limited to, a cell proliferative disorder, such as actinic keratosis, arteriosclerosis, atherosclerosis, bursitis, cirrhosis, hepatitis, mixed connective tissue disease (MCTD), myelofibrosis, paroxysmal nocturnal hemoglobinuria, polycythemia vera, psoriasis, primary thrombocythemia, and cancers including adenocarcinoma, leukemia, lymphoma, melanoma, myeloma, sarcoma, teratocarcinoma, and, in particular, a cancer of the adrenal gland, bladder, bone, bone marrow, brain, breast, cervix, gall bladder, ganglia, gastrointestinal tract, heart, kidney, liver, lung, muscle, ovary, pancreas, parathyroid, penis, prostate, salivary glands, skin, spleen, testis, thymus, thyroid, and uterus; and an autoimmune/inflammatory disorder, such as actinic keratosis, acquired immunodeficiency

syndrome (AIDS), Addison's disease, adult respiratory distress syndrome, allergies, ankylosing spondylitis, amyloidosis, anemia, arteriosclerosis, asthma, atherosclerosis, autoimmune hemolytic anemia, autoimmune thyroiditis, bronchitis, bursitis, cholecystitis, cirrhosis, contact dermatitis, Crohn's disease, atopic dermatitis, dermatomyositis, diabetes mellitus, emphysema, erythroblastosis fetalis, erythema nodosum, atrophic gastritis, glomerulonephritis, Goodpasture's syndrome, gout, Graves' disease, Hashimoto's thyroiditis, paroxysmal nocturnal hemoglobinuria, hepatitis, hypereosinophilia, irritable bowel syndrome, episodic lymphopenia with lymphocytotoxins, mixed connective tissue disease (MCTD), multiple sclerosis, myasthenia gravis, myocardial or pericardial inflammation, myelofibrosis, osteoarthritis, osteoporosis, pancreatitis, polycythemia vera, polymyositis, psoriasis, Reiter's syndrome, rheumatoid arthritis, scleroderma, Sjögren's syndrome, systemic anaphylaxis, systemic lupus erythematosus, systemic sclerosis, primary thrombocythemia, thrombocytopenic purpura, ulcerative colitis, uveitis, Werner syndrome, complications of cancer, hemodialysis, and extracorporeal circulation, trauma, and hematopoietic cancer including lymphoma, leukemia, and myeloma. The mddt can be used to detect the presence of, or to quantify the amount of, an mddtrelated polynucleotide in a sample. This information is then compared to information obtained from appropriate reference samples, and a diagnosis is established. Alternatively, a polynucleotide complementary to a given mddt can inhibit or inactivate a therapeutically relevant gene related to the mddt.

20 Analysis of mddt Expression Patterns

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The expression of mddt may be routinely assessed by hybridization-based methods to determine, for example, the tissue-specificity, disease-specificity, or developmental stage-specificity of mddt expression. For example, the level of expression of mddt may be compared among different cell types or tissues, among diseased and normal cell types or tissues, among cell types or tissues at different developmental stages, or among cell types or tissues undergoing various treatments. This type of analysis is useful, for example, to assess the relative levels of mddt expression in fully or partially differentiated cells or tissues, to determine if changes in mddt expression levels are correlated with the development or progression of specific disease states, and to assess the response of a cell or tissue to a specific therapy, for example, in pharmacological or toxicological studies. Methods for the analysis of mddt expression are based on hybridization and amplification technologies and include membrane-based procedures such as northern blot analysis, high-throughput procedures that utilize, for example, microarrays, and PCR-based procedures.

Hybridization and Genetic Analysis

The mddt, their fragments, or complementary sequences, may be used to identify the presence

of and/or to determine the degree of similarity between two (or more) nucleic acid sequences. The mddt may be hybridized to naturally occurring or recombinant nucleic acid sequences under appropriately selected temperatures and salt concentrations. Hybridization with a probe based on the nucleic acid sequence of at least one of the mddt allows for the detection of nucleic acid sequences, including genomic sequences, which are identical or related to the mddt of the Sequence Listing. Probes may be selected from non-conserved or unique regions of at least one of the polynucleotides of SEQ ID NO:1-396 and tested for their ability to identify or amplify the target nucleic acid sequence using standard protocols.

Polynucleotide sequences that are capable of hybridizing, in particular, to those shown in SEQ ID NO:1-396 and fragments thereof, can be identified using various conditions of stringency. (See, e.g., Wahl, G.M. and S.L. Berger (1987) Methods Enzymol. 152:399-407; Kimmel, A.R. (1987) Methods Enzymol. 152:507-511.) Hybridization conditions are discussed in "Definitions."

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A probe for use in Southern or northern hybridization may be derived from a fragment of an mddt sequence, or its complement, that is up to several hundred nucleotides in length and is either single-stranded or double-stranded. Such probes may be hybridized in solution to biological materials such as plasmids, bacterial, yeast, or human artificial chromosomes, cleared or sectioned tissues, or to artificial substrates containing mddt. Microarrays are particularly suitable for identifying the presence of and detecting the level of expression for multiple genes of interest by examining gene expression correlated with, e.g., various stages of development, treatment with a drug or compound, or disease progression. An array analogous to a dot or slot blot may be used to arrange and link polynucleotides to the surface of a substrate using one or more of the following: mechanical (vacuum), chemical, thermal, or UV bonding procedures. Such an array may contain any number of mddt and may be produced by hand or by using available devices, materials, and machines.

Microarrays may be prepared, used, and analyzed using methods known in the art. (See, e.g., Brennan, T.M. et al. (1995) U.S. Patent No. 5,474,796; Schena, M. et al. (1996) Proc. Natl. Acad. Sci. USA 93:10614-10619; Baldeschweiler et al. (1995) PCT application WO95/251116; Shalon, D. et al. (1995) PCT application WO95/35505; Heller, R.A. et al. (1997) Proc. Natl. Acad. Sci. USA 94:2150-2155; and Heller, M.J. et al. (1997) U.S. Patent No. 5,605,662.)

Probes may be labeled by either PCR or enzymatic techniques using a variety of commercially available reporter molecules. For example, commercial kits are available for radioactive and chemiluminescent labeling (Amersham Pharmacia Biotech) and for alkaline phosphatase labeling (Life Technologies). Alternatively, mddt may be cloned into commercially available vectors for the production of RNA probes. Such probes may be transcribed in the presence of at least one labeled nucleotide (e.g., ³²P-ATP, Amersham Pharmacia Biotech).

Additionally the polynucleotides of SEQ ID NO:1-396 or suitable fragments thereof can be

used to isolate full length cDNA sequences utilizing hybridization and/or amplification procedures well known in the art, e.g., cDNA library screening, PCR amplification, etc. The molecular cloning of such full length cDNA sequences may employ the method of cDNA library screening with probes using the hybridization, stringency, washing, and probing strategies described above and in Ausubel, <u>supra</u>, Chapters 3, 5, and 6. These procedures may also be employed with genomic libraries to isolate genomic sequences of mddt in order to analyze, e.g., regulatory elements.

Genetic Mapping

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Gene identification and mapping are important in the investigation and treatment of almost all conditions, diseases, and disorders. Cancer, cardiovascular disease, Alzheimer's disease, arthritis, diabetes, and mental illnesses are of particular interest. Each of these conditions is more complex than the single gene defects of sickle cell anemia or cystic fibrosis, with select groups of genes being predictive of predisposition for a particular condition, disease, or disorder. For example, cardiovascular disease may result from malfunctioning receptor molecules that fail to clear cholesterol from the bloodstream, and diabetes may result when a particular individual's immune system is activated by an infection and attacks the insulin-producing cells of the pancreas. In some studies, Alzheimer's disease has been linked to a gene on chromosome 21; other studies predict a different gene and location. Mapping of disease genes is a complex and reiterative process and generally proceeds from genetic linkage analysis to physical mapping.

As a condition is noted among members of a family, a genetic linkage map traces parts of chromosomes that are inherited in the same pattern as the condition. Statistics link the inheritance of particular conditions to particular regions of chromosomes, as defined by RFLP or other markers. (See, for example, Lander, E. S. and Botstein, D. (1986) Proc. Natl. Acad. Sci. USA 83:7353-7357.) Occasionally, genetic markers and their locations are known from previous studies. More often, however, the markers are simply stretches of DNA that differ among individuals. Examples of genetic linkage maps can be found in various scientific journals or at the Online Mendelian Inheritance in Man (OMIM) World Wide Web site.

In another embodiment of the invention, mddt sequences may be used to generate hybridization probes useful in chromosomal mapping of naturally occurring genomic sequences. Either coding or noncoding sequences of mddt may be used, and in some instances, noncoding sequences may be preferable over coding sequences. For example, conservation of an mddt coding sequence among members of a multi-gene family may potentially cause undesired cross hybridization during chromosomal mapping. The sequences may be mapped to a particular chromosome, to a specific region of a chromosome, or to artificial chromosome constructions, e.g., human artificial chromosomes (HACs), yeast artificial chromosomes (YACs), bacterial artificial chromosomes (BACs), bacterial P1

constructions, or single chromosome cDNA libraries. (See, e.g., Harrington, J.J. et al. (1997) Nat. Genet. 15:345-355; Price, C.M. (1993) Blood Rev. 7:127-134; and Trask, B.J. (1991) Trends Genet. 7:149-154.)

Fluorescent <u>in situ</u> hybridization (FISH) may be correlated with other physical chromosome mapping techniques and genetic map data. (See, e.g., Meyers, <u>supra</u>, pp. 965-968.) Correlation between the location of mddt on a physical chromosomal map and a specific disorder, or a predisposition to a specific disorder, may help define the region of DNA associated with that disorder. The mddt sequences may also be used to detect polymorphisms that are genetically linked to the inheritance of a particular condition, disease, or disorder.

In situ hybridization of chromosomal preparations and genetic mapping techniques, such as linkage analysis using established chromosomal markers, may be used for extending existing genetic maps. Often the placement of a gene on the chromosome of another mammalian species, such as mouse, may reveal associated markers even if the number or arm of the corresponding human chromosome is not known. These new marker sequences can be mapped to human chromosomes and may provide valuable information to investigators searching for disease genes using positional cloning or other gene discovery techniques. Once a disease or syndrome has been crudely correlated by genetic linkage with a particular genomic region, e.g., ataxia-telangiectasia to 11q22-23, any sequences mapping to that area may represent associated or regulatory genes for further investigation. (See, e.g., Gatti, R.A. et al. (1988) Nature 336:577-580.) The nucleotide sequences of the subject invention may also be used to detect differences in chromosomal architecture due to translocation, inversion, etc., among normal, carrier, or affected individuals.

Once a disease-associated gene is mapped to a chromosomal region, the gene must be cloned in order to identify mutations or other alterations (e.g., translocations or inversions) that may be correlated with disease. This process requires a physical map of the chromosomal region containing the disease-gene of interest along with associated markers. A physical map is necessary for determining the nucleotide sequence of and order of marker genes on a particular chromosomal region. Physical mapping techniques are well known in the art and require the generation of overlapping sets of cloned DNA fragments from a particular organelle, chromosome, or genome. These clones are analyzed to reconstruct and catalog their order. Once the position of a marker is determined, the DNA from that region is obtained by consulting the catalog and selecting clones from that region. The gene of interest is located through positional cloning techniques using hybridization or similar methods.

Diagnostic Uses

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The mddt of the present invention may be used to design probes useful in diagnostic assays.

Such assays, well known to those skilled in the art, may be used to detect or confirm conditions, disorders, or diseases associated with abnormal levels of mddt expression. Labeled probes developed from mddt sequences are added to a sample under hybridizing conditions of desired stringency. In some instances, mddt, or fragments or oligonucleotides derived from mddt, may be used as primers in amplification steps prior to hybridization. The amount of hybridization complex formed is quantified and compared with standards for that cell or tissue. If mddt expression varies significantly from the standard, the assay indicates the presence of the condition, disorder, or disease. Qualitative or quantitative diagnostic methods may include northern, dot blot, or other membrane or dip-stick based technologies or multiple-sample format technologies such as PCR, enzyme-linked immunosorbent assay (ELISA)-like, pin, or chip-based assays.

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The probes described above may also be used to monitor the progress of conditions, disorders, or diseases associated with abnormal levels of mddt expression, or to evaluate the efficacy of a particular therapeutic treatment. The candidate probe may be identified from the mddt that are specific to a given human tissue and have not been observed in GenBank or other genome databases. Such a probe may be used in animal studies, preclinical tests, clinical trials, or in monitoring the treatment of an individual patient. In a typical process, standard expression is established by methods well known in the art for use as a basis of comparison, samples from patients affected by the disorder or disease are combined with the probe to evaluate any deviation from the standard profile, and a therapeutic agent is administered and effects are monitored to generate a treatment profile. Efficacy is evaluated by determining whether the expression progresses toward or returns to the standard normal pattern. Treatment profiles may be generated over a period of several days or several months. Statistical methods well known to those skilled in the art may be use to determine the significance of such therapeutic agents.

The polynucleotides are also useful for identifying individuals from minute biological samples, for example, by matching the RFLP pattern of a sample's DNA to that of an individual's DNA. The polynucleotides of the present invention can also be used to determine the actual base-by-base DNA sequence of selected portions of an individual's genome. These sequences can be used to prepare PCR primers for amplifying and isolating such selected DNA, which can then be sequenced. Using this technique, an individual can be identified through a unique set of DNA sequences. Once a unique ID database is established for an individual, positive identification of that individual can be made from extremely small tissue samples.

In a particular aspect, oligonucleotide primers derived from the mddt of the invention may be used to detect single nucleotide polymorphisms (SNPs). SNPs are substitutions, insertions and deletions that are a frequent cause of inherited or acquired genetic disease in humans. Methods of SNP detection include, but are not limited to, single-stranded conformation polymorphism (SSCP) and

fluorescent SSCP (fSSCP) methods. In SSCP, oligonucleotide primers derived from mddt are used to amplify DNA using the polymerase chain reaction (PCR). The DNA may be derived, for example, from diseased or normal tissue, biopsy samples, bodily fluids, and the like. SNPs in the DNA cause differences in the secondary and tertiary structures of PCR products in single-stranded form, and these differences are detectable using gel electrophoresis in non-denaturing gels. In fSCCP, the oligonucleotide primers are fluorescently labeled, which allows detection of the amplimers in high-throughput equipment such as DNA sequencing machines. Additionally, sequence database analysis methods, termed in silico SNP (isSNP), are capable of identifying polymorphisms by comparing the sequences of individual overlapping DNA fragments which assemble into a common consensus sequence. These computer-based methods filter out sequence variations due to laboratory preparation of DNA and sequencing errors using statistical models and automated analyses of DNA sequence chromatograms. In the alternative, SNPs may be detected and characterized by mass spectrometry using, for example, the high throughput MASSARRAY system (Sequenom, Inc., San Diego CA).

DNA-based identification techniques are critical in forensic technology. DNA sequences taken from very small biological samples such as tissues, e.g., hair or skin, or body fluids, e.g., blood, saliva, semen, etc., can be amplified using, e.g., PCR, to identify individuals. (See, e.g., Erlich, H. (1992) PCR Technology, Freeman and Co., New York, NY). Similarly, polynucleotides of the present invention can be used as polymorphic markers.

There is also a need for reagents capable of identifying the source of a particular tissue.

Appropriate reagents can comprise, for example, DNA probes or primers prepared from the sequences of the present invention that are specific for particular tissues. Panels of such reagents can identify tissue by species and/or by organ type. In a similar fashion, these reagents can be used to screen tissue cultures for contamination.

The polynucleotides of the present invention can also be used as molecular weight markers on nucleic acid gels or Southern blots, as diagnostic probes for the presence of a specific mRNA in a particular cell type, in the creation of subtracted cDNA libraries which aid in the discovery of novel polynucleotides, in selection and synthesis of oligomers for attachment to an array or other support, and as an antigen to elicit an immune response.

Disease Model Systems Using mddt

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The mddt of the invention or their mammalian homologs may be "knocked out" in an animal model system using homologous recombination in embryonic stem (ES) cells. Such techniques are well known in the art and are useful for the generation of animal models of human disease. (See, e.g., U.S. Patent Number 5,175,383 and U.S. Patent Number 5,767,337.) For example, mouse ES cells, such as the mouse 129/SvJ cell line, are derived from the early mouse embryo and grown in culture. The ES cells are transformed with a vector containing the gene of interest disrupted by a marker gene,

e.g., the neomycin phosphotransferase gene (neo; Capecchi, M.R. (1989) Science 244:1288-1292). The vector integrates into the corresponding region of the host genome by homologous recombination. Alternatively, homologous recombination takes place using the Cre-loxP system to knockout a gene of interest in a tissue- or developmental stage-specific manner (Marth, J.D. (1996) Clin. Invest. 97:1999-2002; Wagner, K.U. et al. (1997) Nucleic Acids Res. 25:4323-4330). Transformed ES cells are identified and microinjected into mouse cell blastocysts such as those from the C57BL/6 mouse strain. The blastocysts are surgically transferred to pseudopregnant dams, and the resulting chimeric progeny are genotyped and bred to produce heterozygous or homozygous strains. Transgenic animals thus generated may be tested with potential therapeutic or toxic agents.

The mddt of the invention may also be manipulated <u>in vitro</u> in ES cells derived from human blastocysts. Human ES cells have the potential to differentiate into at least eight separate cell lineages including endoderm, mesoderm, and ectodermal cell types. These cell lineages differentiate into, for example, neural cells, hematopoietic lineages, and cardiomyocytes (Thomson, J.A. et al. (1998) Science 282:1145-1147).

The mddt of the invention can also be used to create "knockin" humanized animals (pigs) or transgenic animals (mice or rats) to model human disease. With knockin technology, a region of mddt is injected into animal ES cells, and the injected sequence integrates into the animal cell genome. Transformed cells are injected into blastulae, and the blastulae are implanted as described above. Transgenic progeny or inbred lines are studied and treated with potential pharmaceutical agents to obtain information on treatment of a human disease. Alternatively, a mammal inbred to overexpress mddt, resulting, e.g., in the secretion of MDDT in its milk, may also serve as a convenient source of that protein (Janne, J. et al. (1998) Biotechnol. Annu. Rev. 4:55-74).

Screening Assays

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MDDT encoded by polynucleotides of the present invention may be used to screen for molecules that bind to or are bound by the encoded polypeptides. The binding of the polypeptide and the molecule may activate (agonist), increase, inhibit (antagonist), or decrease activity of the polypeptide or the bound molecule. Examples of such molecules include antibodies, oligonucleotides, proteins (e.g., receptors), or small molecules.

Preferably, the molecule is closely related to the natural ligand of the polypeptide, e.g., a ligand or fragment thereof, a natural substrate, or a structural or functional mimetic. (See, Coligan et al., (1991) <u>Current Protocols in Immunology</u> 1(2): Chapter 5.) Similarly, the molecule can be closely related to the natural receptor to which the polypeptide binds, or to at least a fragment of the receptor, e.g., the active site. In either case, the molecule can be rationally designed using known techniques. Preferably, the screening for these molecules involves producing appropriate cells which express the

polypeptide, either as a secreted protein or on the cell membrane. Preferred cells include cells from mammals, yeast, <u>Drosophila</u>, or <u>E. coli</u>. Cells expressing the polypeptide or cell membrane fractions which contain the expressed polypeptide are then contacted with a test compound and binding, stimulation, or inhibition of activity of either the polypeptide or the molecule is analyzed.

An assay may simply test binding of a candidate compound to the polypeptide, wherein binding is detected by a fluorophore, radioisotope, enzyme conjugate, or other detectable label. Alternatively, the assay may assess binding in the presence of a labeled competitor.

Additionally, the assay can be carried out using cell-free preparations, polypeptide/molecule affixed to a solid support, chemical libraries, or natural product mixtures. The assay may also simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide, measuring polypeptide/molecule activity or binding, and comparing the polypeptide/molecule activity or binding to a standard.

Preferably, an ELISA assay using, e.g., a monoclonal or polyclonal antibody, can measure polypeptide level in a sample. The antibody can measure polypeptide level by either binding, directly or indirectly, to the polypeptide or by competing with the polypeptide for a substrate.

All of the above assays can be used in a diagnostic or prognostic context. The molecules discovered using these assays can be used to treat disease or to bring about a particular result in a patient (e.g., blood vessel growth) by activating or inhibiting the polypeptide/molecule. Moreover, the assays can discover agents which may inhibit or enhance the production of the polypeptide from suitably manipulated cells or tissues.

Transcript Imaging and Toxicological Testing

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Another embodiment relates to the use of mddt to develop a transcript image of a tissue or cell type. A transcript image represents the global pattern of gene expression by a particular tissue or cell type. Global gene expression patterns are analyzed by quantifying the number of expressed genes and their relative abundance under given conditions and at a given time. (See Seilhamer et al., "Comparative Gene Transcript Analysis," U.S. Patent Number 5,840,484, expressly incorporated by reference herein.) Thus a transcript image may be generated by hybridizing the polynucleotides of the present invention or their complements to the totality of transcripts or reverse transcripts of a particular tissue or cell type. In one embodiment, the hybridization takes place in high-throughput format, wherein the polynucleotides of the present invention or their complements comprise a subset of a plurality of elements on a microarray. The resultant transcript image would provide a profile of gene activity pertaining to disease detection and treatment molecules.

Transcript images which profile mddt expression may be generated using transcripts isolated from tissues, cell lines, biopsies, or other biological samples. The transcript image may thus reflect

mddt expression <u>in vivo</u>, as in the case of a tissue or biopsy sample, or <u>in vitro</u>, as in the case of a cell line.

Transcript images which profile mddt expression may also be used in conjunction with in vitro model systems and preclinical evaluation of pharmaceuticals, as well as toxicological testing of industrial and naturally-occurring environmental compounds. All compounds induce characteristic gene expression patterns, frequently termed molecular fingerprints or toxicant signatures, which are indicative of mechanisms of action and toxicity (Nuwaysir, E. F. et al. (1999) Mol. Carcinog. 24:153-159; Steiner, S. and Anderson, N. L. (2000) Toxicol. Lett. 112-113:467-71, expressly incorporated by reference herein). If a test compound has a signature similar to that of a compound with known toxicity, it is likely to share those toxic properties. These fingerprints or signatures are most useful and refined when they contain expression information from a large number of genes and gene families. Ideally, a genome-wide measurement of expression provides the highest quality signature. Even genes whose expression is not altered by any tested compounds are important as well, as the levels of expression of these genes are used to normalize the rest of the expression data. The normalization procedure is useful for comparison of expression data after treatment with different compounds. While the assignment of gene function to elements of a toxicant signature aids in interpretation of toxicity mechanisms, knowledge of gene function is not necessary for the statistical matching of signatures which leads to prediction of toxicity. (See, for example, Press Release 00-02 from the National Institute of Environmental Health Sciences, released February 29, 2000, available at http://www.niehs.nih.gov/oc/news/toxchip.htm.) Therefore, it is important and desirable in toxicological screening using toxicant signatures to include all expressed gene sequences.

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In one embodiment, the toxicity of a test compound is assessed by treating a biological sample containing nucleic acids with the test compound. Nucleic acids that are expressed in the treated biological sample are hybridized with one or more probes specific to the polynucleotides of the present invention, so that transcript levels corresponding to the polynucleotides of the present invention may be quantified. The transcript levels in the treated biological sample are compared with levels in an untreated biological sample. Differences in the transcript levels between the two samples are indicative of a toxic response caused by the test compound in the treated sample.

Another particular embodiment relates to the use of MDDT encoded by polynucleotides of the present invention to analyze the proteome of a tissue or cell type. The term proteome refers to the global pattern of protein expression in a particular tissue or cell type. Each protein component of a proteome can be subjected individually to further analysis. Proteome expression patterns, or profiles, are analyzed by quantifying the number of expressed proteins and their relative abundance under given conditions and at a given time. A profile of a cell's proteome may thus be generated by separating and analyzing the polypeptides of a particular tissue or cell type. In one embodiment, the

separation is achieved using two-dimensional gel electrophoresis, in which proteins from a sample are separated by isoelectric focusing in the first dimension, and then according to molecular weight by sodium dodecyl sulfate slab gel electrophoresis in the second dimension (Steiner and Anderson, supra). The proteins are visualized in the gel as discrete and uniquely positioned spots, typically by staining the gel with an agent such as Coomassie Blue or silver or fluorescent stains. The optical density of each protein spot is generally proportional to the level of the protein in the sample. The optical densities of equivalently positioned protein spots from different samples, for example, from biological samples either treated or untreated with a test compound or therapeutic agent, are compared to identify any changes in protein spot density related to the treatment. The proteins in the spots are partially sequenced using, for example, standard methods employing chemical or enzymatic cleavage followed by mass spectrometry. The identity of the protein in a spot may be determined by comparing its partial sequence, preferably of at least 5 contiguous amino acid residues, to the polypeptide sequences of the present invention. In some cases, further sequence data may be obtained for definitive protein identification.

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A proteomic profile may also be generated using antibodies specific for MDDT to quantify the levels of MDDT expression. In one embodiment, the antibodies are used as elements on a microarray, and protein expression levels are quantified by exposing the microarray to the sample and detecting the levels of protein bound to each array element (Lueking, A. et al. (1999) Anal. Biochem. 270:103-11; Mendoze, L. G. et al. (1999) Biotechniques 27:778-88). Detection may be performed by a variety of methods known in the art, for example, by reacting the proteins in the sample with a thiolor amino-reactive fluorescent compound and detecting the amount of fluorescence bound at each array element.

Toxicant signatures at the proteome level are also useful for toxicological screening, and should be analyzed in parallel with toxicant signatures at the transcript level. There is a poor correlation between transcript and protein abundances for some proteins in some tissues (Anderson, N. L. and Seilhamer, J. (1997) Electrophoresis 18:533-537), so proteome toxicant signatures may be useful in the analysis of compounds which do not significantly affect the transcript image, but which alter the proteomic profile. In addition, the analysis of transcripts in body fluids is difficult, due to rapid degradation of mRNA, so proteomic profiling may be more reliable and informative in such cases.

In another embodiment, the toxicity of a test compound is assessed by treating a biological sample containing proteins with the test compound. Proteins that are expressed in the treated biological sample are separated so that the amount of each protein can be quantified. The amount of each protein is compared to the amount of the corresponding protein in an untreated biological sample. A difference in the amount of protein between the two samples is indicative of a toxic response to the test compound in the treated sample. Individual proteins are identified by sequencing the amino acid

residues of the individual proteins and comparing these partial sequences to the MDDT encoded by polynucleotides of the present invention.

In another embodiment, the toxicity of a test compound is assessed by treating a biological sample containing proteins with the test compound. Proteins from the biological sample are incubated with antibodies specific to the MDDT encoded by polynucleotides of the present invention. The amount of protein recognized by the antibodies is quantified. The amount of protein in the treated biological sample is compared with the amount in an untreated biological sample. A difference in the amount of protein between the two samples is indicative of a toxic response to the test compound in the treated sample.

Transcript images may be used to profile mddt expression in distinct tissue types. This process can be used to determine disease detection and treatment molecule activity in a particular tissue type relative to this activity in a different tissue type. Transcript images may be used to generate a profile of mddt expression characteristic of diseased tissue. Transcript images of tissues before and after treatment may be used for diagnostic purposes, to monitor the progression of disease, and to monitor the efficacy of drug treatments for diseases which affect the activity of disease detection and treatment molecules.

Transcript images of cell lines can be used to assess disease detection and treatment molecule activity and/or to identify cell lines that lack or misregulate this activity. Such cell lines may then be treated with pharmaceutical agents, and a transcript image following treatment may indicate the efficacy of these agents in restoring desired levels of this activity. A similar approach may be used to assess the toxicity of pharmaceutical agents as reflected by undesirable changes in disease detection and treatment molecule activity. Candidate pharmaceutical agents may be evaluated by comparing their associated transcript images with those of pharmaceutical agents of known effectiveness.

25 Antisense Molecules

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The polynucleotides of the present invention are useful in antisense technology. Antisense technology or therapy relies on the modulation of expression of a target protein through the specific binding of an antisense sequence to a target sequence encoding the target protein or directing its expression. (See, e.g., Agrawal, S., ed. (1996) Antisense Therapeutics, Humana Press Inc., Totawa NJ; Alama, A. et al. (1997) Pharmacol. Res. 36(3):171-178; Crooke, S.T. (1997) Adv. Pharmacol. 40:1-49; Sharma, H.W. and R. Narayanan (1995) Bioessays 17(12):1055-1063; and Lavrosky, Y. et al. (1997) Biochem. Mol. Med. 62(1):11-22.) An antisense sequence is a polynucleotide sequence capable of specifically hybridizing to at least a portion of the target sequence. Antisense sequences bind to cellular mRNA and/or genomic DNA, affecting translation and/or transcription. Antisense sequences can be DNA, RNA, or nucleic acid mimics and analogs. (See, e.g., Rossi, J.J. et al. (1991)

Antisense Res. Dev. 1(3):285-288; Lee, R. et al. (1998) Biochemistry 37(3):900-1010; Pardridge, W.M. et al. (1995) Proc. Natl. Acad. Sci. USA 92(12):5592-5596; and Nielsen, P. E. and Haaima, G. (1997) Chem. Soc. Rev. 96:73-78.) Typically, the binding which results in modulation of expression occurs through hybridization or binding of complementary base pairs. Antisense sequences can also bind to DNA duplexes through specific interactions in the major groove of the double helix.

The polynucleotides of the present invention and fragments thereof can be used as antisense sequences to modify the expression of the polypeptide encoded by mddt. The antisense sequences can be produced <u>ex vivo</u>, such as by using any of the ABI nucleic acid synthesizer series (Applied Biosystems) or other automated systems known in the art. Antisense sequences can also be produced biologically, such as by transforming an appropriate host cell with an expression vector containing the sequence of interest. (See, e.g., Agrawal, <u>supra.</u>)

In therapeutic use, any gene delivery system suitable for introduction of the antisense sequences into appropriate target cells can be used. Antisense sequences can be delivered intracellularly in the form of an expression plasmid which, upon transcription, produces a sequence complementary to at least a portion of the cellular sequence encoding the target protein. (See, e.g., Slater, J.E., et al. (1998) J. Allergy Clin. Immunol. 102(3):469-475; and Scanlon, K.J., et al. (1995) 9(13):1288-1296.) Antisense sequences can also be introduced intracellularly through the use of viral vectors, such as retrovirus and adeno-associated virus vectors. (See, e.g., Miller, A.D. (1990) Blood 76:271; Ausubel, F.M. et al. (1995) Current Protocols in Molecular Biology, John Wiley & Sons, New York NY; Uckert, W. and W. Walther (1994) Pharmacol. Ther. 63(3):323-347.) Other gene delivery mechanisms include liposome-derived systems, artificial viral envelopes, and other systems known in the art. (See, e.g., Rossi, J.J. (1995) Br. Med. Bull. 51(1):217-225; Boado, R.J. et al. (1998) J. Pharm. Sci. 87(11):1308-1315; and Morris, M.C. et al. (1997) Nucleic Acids Res. 25(14):2730-2736.)

25 Expression

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In order to express a biologically active MDDT, the nucleotide sequences encoding MDDT or fragments thereof may be inserted into an appropriate expression vector, i.e., a vector which contains the necessary elements for transcriptional and translational control of the inserted coding sequence in a suitable host. Methods which are well known to those skilled in the art may be used to construct expression vectors containing sequences encoding MDDT and appropriate transcriptional and translational control elements. These methods include <u>in vitro</u> recombinant DNA techniques, synthetic techniques, and <u>in vivo</u> genetic recombination. (See, e.g., Sambrook, <u>supra</u>, Chapters 4, 8, 16, and 17; and Ausubel, <u>supra</u>, Chapters 9, 10, 13, and 16.)

A variety of expression vector/host systems may be utilized to contain and express sequences encoding MDDT. These include, but are not limited to, microorganisms such as bacteria transformed

with recombinant bacteriophage, plasmid, or cosmid DNA expression vectors; yeast transformed with yeast expression vectors; insect cell systems infected with viral expression vectors (e.g., baculovirus); plant cell systems transformed with viral expression vectors (e.g., cauliflower mosaic virus, CaMV, or tobacco mosaic virus, TMV) or with bacterial expression vectors (e.g., Ti or pBR322 plasmids); or animal (mammalian) cell systems. (See, e.g., Sambrook, supra; Ausubel, 1995, supra, Van Heeke, G. 5 and S.M. Schuster (1989) J. Biol. Chem. 264:5503-5509; Bitter, G.A. et al. (1987) Methods Enzymol. 153:516-544; Scorer, C.A. et al. (1994) Bio/Technology 12:181-184; Engelhard, E.K. et al. (1994) Proc. Natl. Acad. Sci. USA 91:3224-3227; Sandig, V. et al. (1996) Hum. Gene Ther. 7:1937-1945; Takamatsu, N. (1987) EMBO J. 6:307-311; Coruzzi, G. et al. (1984) EMBO J. 3:1671-1680; Broglie, R. et al. (1984) Science 224:838-843; Winter, J. et al. (1991) Results Probl. Cell Differ. 17:85-105; 10 The McGraw Hill Yearbook of Science and Technology (1992) McGraw Hill, New York NY, pp. 191-196; Logan, J. and T. Shenk (1984) Proc. Natl. Acad. Sci. USA 81:3655-3659; and Harrington, J.J. et al. (1997) Nat. Genet. 15:345-355.) Expression vectors derived from retroviruses, adenoviruses, or herpes or vaccinia viruses, or from various bacterial plasmids, may be used for delivery of nucleotide sequences to the targeted organ, tissue, or cell population. (See, e.g., Di Nicola, 15 M. et al. (1998) Cancer Gen. Ther. 5(6):350-356; Yu, M. et al., (1993) Proc. Natl. Acad. Sci. USA 90(13):6340-6344; Buller, R.M. et al. (1985) Nature 317(6040):813-815; McGregor, D.P. et al. (1994) Mol. Immunol. 31(3):219-226; and Verma, I.M. and N. Somia (1997) Nature 389:239-242.) The invention is not limited by the host cell employed.

For long term production of recombinant proteins in mammalian systems, stable expression of MDDT in cell lines is preferred. For example, sequences encoding MDDT can be transformed into cell lines using expression vectors which may contain viral origins of replication and/or endogenous expression elements and a selectable marker gene on the same or on a separate vector. Any number of selection systems may be used to recover transformed cell lines. (See, e.g., Wigler, M. et al. (1977) Cell 11:223-232; Lowy, I. et al. (1980) Cell 22:817-823.; Wigler, M. et al. (1980) Proc. Natl. Acad. Sci. USA 77:3567-3570; Colbere-Garapin, F. et al. (1981) J. Mol. Biol. 150:1-14; Hartman, S.C. and R.C.Mulligan (1988) Proc. Natl. Acad. Sci. USA 85:8047-8051; Rhodes, C.A. (1995) Methods Mol. Biol. 55:121-131.)

Therapeutic Uses of mddt

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The mddt of the invention may be used for somatic or germline gene therapy. Gene therapy may be performed to (i) correct a genetic deficiency (e.g., in the cases of severe combined immunodeficiency (SCID)-X1 disease characterized by X-linked inheritance (Cavazzana-Calvo, M. et al. (2000) Science 288:669-672), severe combined immunodeficiency syndrome associated with an inherited adenosine deaminase (ADA) deficiency (Blaese, R.M. et al. (1995) Science 270:475-480;

Bordignon, C. et al. (1995) Science 270:470-475), cystic fibrosis (Zabner, J. et al. (1993) Cell 75:207-216; Crystal, R.G. et al. (1995) Hum. Gene Therapy 6:643-666; Crystal, R.G. et al. (1995) Hum. Gene Therapy 6:667-703), thalassemias, familial hypercholesterolemia, and hemophilia resulting from Factor VIII or Factor IX deficiencies (Crystal, R.G. (1995) Science 270:404-410; Verma, I.M. and Somia, N. (1997) Nature 389:239-242)), (ii) express a conditionally lethal gene product (e.g., in the case of cancers which result from unregulated cell proliferation), or (iii) express a protein which affords protection against intracellular parasites (e.g., against human retroviruses, such as human immunodeficiency virus (HIV) (Baltimore, D. (1988) Nature 335:395-396; Poeschla, E. et al. (1996) Proc. Natl. Acad. Sci. USA. 93:11395-11399), hepatitis B or C virus (HBV, HCV); fungal parasites, such as Candida albicans and Paracoccidioides brasiliensis; and protozoan parasites such as Plasmodium falciparum and Trypanosoma cruzi). In the case where a genetic deficiency in mddt expression or regulation causes disease, the expression of mddt from an appropriate population of transduced cells may alleviate the clinical manifestations caused by the genetic deficiency.

In a further embodiment of the invention, diseases or disorders caused by deficiencies in mddt are treated by constructing mammalian expression vectors comprising mddt and introducing these vectors by mechanical means into mddt-deficient cells. Mechanical transfer technologies for use with cells in vivo or ex vitro include (i) direct DNA microinjection into individual cells, (ii) ballistic gold particle delivery, (iii) liposome-mediated transfection, (iv) receptor-mediated gene transfer, and (v) the use of DNA transposons (Morgan, R.A. and Anderson, W.F. (1993) Annu. Rev. Biochem. 62:191-217; Ivics, Z. (1997) Cell 91:501-510; Boulay, J-L. and Récipon, H. (1998) Curr. Opin. Biotechnol. 9:445-450).

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Expression vectors that may be effective for the expression of mddt include, but are not limited to, the PCDNA 3.1, EPITAG, PRCCMV2, PREP, PVAX vectors (Invitrogen, Carlsbad CA), PCMV-SCRIPT, PCMV-TAG, PEGSH/PERV (Stratagene, La Jolla CA), and PTET-OFF, PTET-ON, PTRE2, PTRE2-LUC, PTK-HYG (Clontech, Palo Alto CA). The mddt of the invention may be expressed using (i) a constitutively active promoter, (e.g., from cytomegalovirus (CMV), Rous sarcoma virus (RSV), SV40 virus, thymidine kinase (TK), or β-actin genes), (ii) an inducible promoter (e.g., the tetracycline-regulated promoter (Gossen, M. and Bujard, H. (1992) Proc. Natl. Acad. Sci. U.S.A. 89:5547-5551; Gossen, M. et al., (1995) Science 268:1766-1769; Rossi, F.M.V. and Blau, H.M. (1998) Curr. Opin. Biotechnol. 9:451-456), commercially available in the T-REX plasmid (Invitrogen); the ecdysone-inducible promoter (available in the plasmids PVGRXR and PIND; Invitrogen); the FK506/rapamycin inducible promoter; or the RU486/mifepristone inducible promoter (Rossi, F.M.V. and Blau, H.M. supra), or (iii) a tissue-specific promoter or the native promoter of the endogenous gene encoding MDDT from a normal individual.

Commercially available liposome transformation kits (e.g., the PERFECT LIPID TRANSFECTION KIT, available from Invitrogen) allow one with ordinary skill in the art to deliver polynucleotides to target cells in culture and require minimal effort to optimize experimental parameters. In the alternative, transformation is performed using the calcium phosphate method (Graham, F.L. and Eb, A.J. (1973) Virology 52:456-467), or by electroporation (Neumann, E. et al. (1982) EMBO J. 1:841-845). The introduction of DNA to primary cells requires modification of these standardized mammalian transfection protocols.

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In another embodiment of the invention, diseases or disorders caused by genetic defects with respect to mddt expression are treated by constructing a retrovirus vector consisting of (i) mddt under the control of an independent promoter or the retrovirus long terminal repeat (LTR) promoter, (ii) 10 appropriate RNA packaging signals, and (iii) a Rev-responsive element (RRE) along with additional retrovirus cis-acting RNA sequences and coding sequences required for efficient vector propagation. Retrovirus vectors (e.g., PFB and PFBNEO) are commercially available (Stratagene) and are based on published data (Riviere, I. et al. (1995) Proc. Natl. Acad. Sci. U.S.A. 92:6733-6737), incorporated by reference herein. The vector is propagated in an appropriate vector producing cell line (VPCL) that expresses an envelope gene with a tropism for receptors on the target cells or a promiscuous envelope protein such as VSVg (Armentano, D. et al. (1987) J. Virol. 61:1647-1650; Bender, M.A. et al. (1987) J. Virol. 61:1639-1646; Adam, M.A. and Miller, A.D. (1988) J. Virol. 62:3802-3806; Dull, T. et al. (1998) J. Virol. 72:8463-8471; Zufferey, R. et al. (1998) J. Virol. 72:9873-9880). U.S. Patent Number 5,910,434 to Rigg ("Method for obtaining retrovirus packaging cell lines producing high 20 transducing efficiency retroviral supernatant") discloses a method for obtaining retrovirus packaging cell lines and is hereby incorporated by reference. Propagation of retrovirus vectors, transduction of a population of cells (e.g., CD4⁺ T-cells), and the return of transduced cells to a patient are procedures well known to persons skilled in the art of gene therapy and have been well documented (Ranga, U. et al. (1997) J. Virol. 71:7020-7029; Bauer, G. et al. (1997) Blood 89:2259-2267; Bonyhadi, 25 M.L. (1997) J. Virol. 71:4707-4716; Ranga, U. et al. (1998) Proc. Natl. Acad. Sci. U.S.A. 95:1201-1206; Su, L. (1997) Blood 89:2283-2290).

In the alternative, an adenovirus-based gene therapy delivery system is used to deliver mddt to cells which have one or more genetic abnormalities with respect to the expression of mddt. The construction and packaging of adenovirus-based vectors are well known to those with ordinary skill in the art. Replication defective adenovirus vectors have proven to be versatile for importing genes encoding immunoregulatory proteins into intact islets in the pancreas (Csete, M.E. et al. (1995) Transplantation 27:263-268). Potentially useful adenoviral vectors are described in U.S. Patent Number 5,707,618 to Armentano ("Adenovirus vectors for gene therapy"), hereby incorporated by

reference. For adenoviral vectors, see also Antinozzi, P.A. et al. (1999) Annu. Rev. Nutr. 19:511-544 and Verma, I.M. and Somia, N. (1997) Nature 18:389:239-242, both incorporated by reference herein.

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In another alternative, a herpes-based, gene therapy delivery system is used to deliver mddt to target cells which have one or more genetic abnormalities with respect to the expression of mddt. The use of herpes simplex virus (HSV)-based vectors may be especially valuable for introducing mddt to cells of the central nervous system, for which HSV has a tropism. The construction and packaging of herpes-based vectors are well known to those with ordinary skill in the art. A replication-competent herpes simplex virus (HSV) type 1-based vector has been used to deliver a reporter gene to the eyes of primates (Liu, X. et al. (1999) Exp. Eye Res.169:385-395). The construction of a HSV-1 virus vector has also been disclosed in detail in U.S. Patent Number 5,804,413 to DeLuca ("Herpes simplex virus strains for gene transfer"), which is hereby incorporated by reference. U.S. Patent Number 5,804,413 teaches the use of recombinant HSV d92 which consists of a genome containing at least one exogenous gene to be transferred to a cell under the control of the appropriate promoter for purposes including human gene therapy. Also taught by this patent are the construction and use of recombinant HSV strains deleted for ICP4, ICP27 and ICP22. For HSV vectors, see also Goins, W. F. et al. 1999 J. Virol. 73:519-532 and Xu, H. et al., (1994) Dev. Biol. 163:152-161, hereby incorporated by reference. The manipulation of cloned herpesvirus sequences, the generation of recombinant virus following the transfection of multiple plasmids containing different segments of the large herpesvirus genomes, the growth and propagation of herpesvirus, and the infection of cells with herpesvirus are techniques well known to those of ordinary skill in the art.

In another alternative, an alphavirus (positive, single-stranded RNA virus) vector is used to deliver mddt to target cells. The biology of the prototypic alphavirus, Semliki Forest Virus (SFV), has been studied extensively and gene transfer vectors have been based on the SFV genome (Garoff, H. and Li, K-J. (1998) Curr. Opin. Biotech. 9:464-469). During alphavirus RNA replication, a subgenomic RNA is generated that normally encodes the viral capsid proteins. This subgenomic RNA replicates to higher levels than the full-length genomic RNA, resulting in the overproduction of capsid proteins relative to the viral proteins with enzymatic activity (e.g., protease and polymerase). Similarly, inserting mddt into the alphavirus genome in place of the capsid-coding region results in the production of a large number of mddt RNAs and the synthesis of high levels of MDDT in vector transduced cells. While alphavirus infection is typically associated with cell lysis within a few days, the ability to establish a persistent infection in hamster normal kidney cells (BHK-21) with a variant of Sindbis virus (SIN) indicates that the lytic replication of alphaviruses can be altered to suit the needs of the gene therapy application (Dryga, S.A. et al. (1997) Virology 228:74-83). The wide host range of alphaviruses will allow the introduction of mddt into a variety of cell types. The specific transduction of a subset of cells in a population may require the sorting of cells prior to transduction. The methods

of manipulating infectious cDNA clones of alphaviruses, performing alphavirus cDNA and RNA transfections, and performing alphavirus infections, are well known to those with ordinary skill in the art.

Antibodies

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Anti-MDDT antibodies may be used to analyze protein expression levels. Such antibodies include, but are not limited to, polyclonal, monoclonal, chimeric, single chain, and Fab fragments. For descriptions of and protocols of antibody technologies, see, e.g., Pound J.D. (1998) Immunochemical Protocols, Humana Press, Totowa, NJ.

The amino acid sequence encoded by the mddt of the Sequence Listing may be analyzed by appropriate software (e.g., LASERGENE NAVIGATOR software, DNASTAR) to determine regions of high immunogenicity. The optimal sequences for immunization are selected from the C-terminus, the N-terminus, and those intervening, hydrophilic regions of the polypeptide which are likely to be exposed to the external environment when the polypeptide is in its natural conformation.

Analysis used to select appropriate epitopes is also described by Ausubel (1997, suppra, Chapter 11.7).

Peptides used for antibody induction do not need to have biological activity; however, they must be antigenic. Peptides used to induce specific antibodies may have an amino acid sequence consisting of at least five amino acids, preferably at least 10 amino acids, and most preferably at least 15 amino acids. A peptide which mimics an antigenic fragment of the natural polypeptide may be fused with another protein such as keyhole hemolimpet cyanin (KLH; Sigma, St. Louis MO) for antibody production. A peptide encompassing an antigenic region may be expressed from an mddt, synthesized as described above, or purified from human cells.

Procedures well known in the art may be used for the production of antibodies. Various hosts including mice, goats, and rabbits, may be immunized by injection with a peptide. Depending on the host species, various adjuvants may be used to increase immunological response.

In one procedure, peptides about 15 residues in length may be synthesized using an ABI 431A peptide synthesizer (Applied Biosystems) using fmoc-chemistry and coupled to KLH (Sigma) by reaction with M-maleimidobenzoyl-N-hydroxysuccinimide ester (Ausubel, 1995, supra). Rabbits are immunized with the peptide-KLH complex in complete Freund's adjuvant. The resulting antisera are tested for antipeptide activity by binding the peptide to plastic, blocking with 1% bovine serum albumin (BSA), reacting with rabbit antisera, washing, and reacting with radioiodinated goat anti-rabbit IgG. Antisera with antipeptide activity are tested for anti-MDDT activity using protocols well known in the art, including ELISA, radioimmunoassay (RIA), and immunoblotting.

In another procedure, isolated and purified peptide may be used to immunize mice (about 100 µg of peptide) or rabbits (about 1 mg of peptide). Subsequently, the peptide is radioiodinated and used

to screen the immunized animals' B-lymphocytes for production of antipeptide antibodies. Positive cells are then used to produce hybridomas using standard techniques. About 20 mg of peptide is sufficient for labeling and screening several thousand clones. Hybridomas of interest are detected by screening with radioiodinated peptide to identify those fusions producing peptide-specific monoclonal antibody. In a typical protocol, wells of a multi-well plate (FAST, Becton-Dickinson, Palo Alto, CA) are coated with affinity-purified, specific rabbit-anti-mouse (or suitable anti-species IgG) antibodies at 10 mg/ml. The coated wells are blocked with 1% BSA and washed and exposed to supernatants from hybridomas. After incubation, the wells are exposed to radiolabeled peptide at 1 mg/ml.

Clones producing antibodies bind a quantity of labeled peptide that is detectable above background. Such clones are expanded and subjected to 2 cycles of cloning. Cloned hybridomas are injected into pristane-treated mice to produce ascites, and monoclonal antibody is purified from the ascitic fluid by affinity chromatography on protein A (Amersham Pharmacia Biotech). Several procedures for the production of monoclonal antibodies, including <u>in vitro</u> production, are described in Pound (<u>supra</u>). Monoclonal antibodies with antipeptide activity are tested for anti-MDDT activity using protocols well known in the art, including ELISA, RIA, and immunoblotting.

Antibody fragments containing specific binding sites for an epitope may also be generated. For example, such fragments include, but are not limited to, the F(ab')2 fragments produced by pepsin digestion of the antibody molecule, and the Fab fragments generated by reducing the disulfide bridges of the F(ab')2 fragments. Alternatively, construction of Fab expression libraries in filamentous bacteriophage allows rapid and easy identification of monoclonal fragments with desired specificity (Pound, supra, Chaps. 45-47). Antibodies generated against polypeptide encoded by mddt can be used to purify and characterize full-length MDDT protein and its activity, binding partners, etc.

Assays Using Antibodies

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Anti-MDDT antibodies may be used in assays to quantify the amount of MDDT found in a particular human cell. Such assays include methods utilizing the antibody and a label to detect expression level under normal or disease conditions. The peptides and antibodies of the invention may be used with or without modification or labeled by joining them, either covalently or noncovalently, with a reporter molecule.

Protocols for detecting and measuring protein expression using either polyclonal or monoclonal antibodies are well known in the art. Examples include ELISA, RIA, and fluorescent activated cell sorting (FACS). Such immunoassays typically involve the formation of complexes between the MDDT and its specific antibody and the measurement of such complexes. These and other assays are described in Pound (supra).

Without further elaboration, it is believed that one skilled in the art can, using the preceding description, utilize the present invention to its fullest extent. The following preferred specific embodiments are, therefore, to be construed as merely illustrative, and not limitative of the remainder of the disclosure in any way whatsoever.

The disclosures of all patents, applications, and publications mentioned above and below, including U.S. Ser. No. 60/280,067, U.S. Ser. No. 60/279,619, U.S. Ser. No. 60/280,068, U.S. Ser. No. 60/291,280, U.S. Ser. No. 60/291,849, U.S. Ser. No. 60/291,829, U.S. Ser. No. 60/299,428, U.S. Ser. No. 60/300,001, and U.S. Ser. No. 60/299,776, are hereby expressly incorporated by reference.

10 EXAMPLES

I. Construction of cDNA Libraries

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RNA was purchased from CLONTECH Laboratories, Inc. (Palo Alto CA) or isolated from various tissues. Some tissues were homogenized and lysed in guanidinium isothiocyanate, while others were homogenized and lysed in phenol or in a suitable mixture of denaturants, such as TRIZOL (Life Technologies), a monophasic solution of phenol and guanidine isothiocyanate. The resulting lysates were centrifuged over CsCl cushions or extracted with chloroform. RNA was precipitated with either isopropanol or sodium acetate and ethanol, or by other routine methods.

Phenol extraction and precipitation of RNA were repeated as necessary to increase RNA purity. In most cases, RNA was treated with DNase. For most libraries, poly(A+) RNA was isolated using oligo d(T)-coupled paramagnetic particles (Promega Corporation (Promega), Madison WI), OLIGOTEX latex particles (QIAGEN, Inc. (QIAGEN), Valencia CA), or an OLIGOTEX mRNA purification kit (QIAGEN). Alternatively, RNA was isolated directly from tissue lysates using other RNA isolation kits, e.g., the POLY(A)PURE mRNA purification kit (Ambion, Inc., Austin TX).

In some cases, Stratagene was provided with RNA and constructed the corresponding cDNA libraries. Otherwise, cDNA was synthesized and cDNA libraries were constructed with the UNIZAP vector system (Stratagene Cloning Systems, Inc. (Stratagene), La Jolla CA) or SUPERSCRIPT plasmid system (Life Technologies), using the recommended procedures or similar methods known in the art. (See, e.g., Ausubel, 1997, supra, Chapters 5.1 through 6.6.) Reverse transcription was initiated using oligo d(T) or random primers. Synthetic oligonucleotide adapters were ligated to double stranded cDNA, and the cDNA was digested with the appropriate restriction enzyme or enzymes. For most libraries, the cDNA was size-selected (300-1000 bp) using SEPHACRYL S1000, SEPHAROSE CL2B, or SEPHAROSE CL4B column chromatography (Amersham Pharmacia Biotech) or preparative agarose gel electrophoresis. cDNAs were ligated into compatible restriction enzyme sites of the polylinker of a suitable plasmid, e.g., PBLUESCRIPT plasmid (Stratagene), PSPORT1 plasmid (Life Technologies), PCDNA2.1 plasmid (Invitrogen,

Carlsbad CA), PBK-CMV plasmid (Stratagene), PCR2-TOPOTA plasmid (Invitrogen), PCMV-ICIS plasmid (Stratagene), pIGEN (Incyte Genomics, Palo Alto CA), pRARE (Incyte Genomics), or pINCY (Incyte Genomics), or derivatives thereof. Recombinant plasmids were transformed into competent <u>E. coli</u> cells including XL1-Blue, XL1-BlueMRF, or SOLR from Stratagene or DH5α, DH10B, or ElectroMAX DH10B from Life Technologies.

II. Isolation of cDNA Clones

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Plasmids were recovered from host cells by <u>in vivo</u> excision using the UNIZAP vector system (Stratagene) or by cell lysis. Plasmids were purified using at least one of the following: the Magic or WIZARD Minipreps DNA purification system (Promega); the AGTC Miniprep purification kit (Edge BioSystems, Gaithersburg MD); and the QIAWELL 8, QIAWELL 8 Plus, and QIAWELL 8 Ultra plasmid purification systems or the R.E.A.L. PREP 96 plasmid purification kit (QIAGEN). Following precipitation, plasmids were resuspended in 0.1 ml of distilled water and stored, with or without lyophilization, at 4°C.

Alternatively, plasmid DNA was amplified from host cell lysates using direct link PCR in a high-throughput format. (Rao, V.B. (1994) Anal. Biochem. 216:1-14.) Host cell lysis and thermal cycling steps were carried out in a single reaction mixture. Samples were processed and stored in 384-well plates, and the concentration of amplified plasmid DNA was quantified fluorometrically using PICOGREEN dye (Molecular Probes, Inc. (Molecular Probes), Eugene OR) and a FLUOROSKAN II fluorescence scanner (Labsystems Oy, Helsinki, Finland).

III. Sequencing and Analysis

cDNA sequencing reactions were processed using standard methods or high-throughput instrumentation such as the ABI CATALYST 800 thermal cycler (Applied Biosystems) or the PTC-200 thermal cycler (MJ Research) in conjunction with the HYDRA microdispenser (Robbins Scientific Corp., Sunnyvale CA) or the MICROLAB 2200 liquid transfer system (Hamilton). cDNA sequencing reactions were prepared using reagents provided by Amersham Pharmacia Biotech or supplied in ABI sequencing kits such as the ABI PRISM BIGDYE Terminator cycle sequencing ready reaction kit (Applied Biosystems). Electrophoretic separation of cDNA sequencing reactions and detection of labeled polynucleotides were carried out using the MEGABACE 1000 DNA sequencing system (Molecular Dynamics); the ABI PRISM 373 or 377 sequencing system (Applied Biosystems) in conjunction with standard ABI protocols and base calling software; or other sequence analysis systems known in the art. Reading frames within the cDNA sequences were identified using standard methods (reviewed in Ausubel, 1997, supra, Chapter 7.7). Some of the cDNA sequences

were selected for extension using the techniques disclosed in Example VIII.

IV. Assembly and Analysis of Sequences

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Component sequences from chromatograms were subject to PHRED analysis and assigned a quality score. The sequences having at least a required quality score were subject to various preprocessing editing pathways to eliminate, e.g., low quality 3' ends, vector and linker sequences, polyA tails, Alu repeats, mitochondrial and ribosomal sequences, bacterial contamination sequences, and sequences smaller than 50 base pairs. In particular, low-information sequences and repetitive elements (e.g., dinucleotide repeats, Alu repeats, etc.) were replaced by "n's", or masked, to prevent spurious matches.

Processed sequences were then subject to assembly procedures in which the sequences were assigned to gene bins (bins). Each sequence could only belong to one bin. Sequences in each gene bin were assembled to produce consensus sequences (templates). Subsequent new sequences were added to existing bins using BLASTN (v.1.4 WashU) and CROSSMATCH. Candidate pairs were identified as all BLAST hits having a quality score greater than or equal to 150. Alignments of at least 82% local identity were accepted into the bin. The component sequences from each bin were assembled using a version of PHRAP. Bins with several overlapping component sequences were assembled using DEEP PHRAP. The orientation (sense or antisense) of each assembled template was determined based on the number and orientation of its component sequences. Template sequences as disclosed in the sequence listing correspond to sense strand sequences (the "forward" reading frames), to the best determination. The complementary (antisense) strands are inherently disclosed herein. The component sequences which were used to assemble each template consensus sequence are listed in Table 5, along with their positions along the template nucleotide sequences.

Bins were compared against each other and those having local similarity of at least 82% were combined and reassembled. Reassembled bins having templates of insufficient overlap (less than 95% local identity) were re-split. Assembled templates were also subject to analysis by STITCHER/EXON MAPPER algorithms which analyze the probabilities of the presence of splice variants, alternatively spliced exons, splice junctions, differential expression of alternative spliced genes across tissue types or disease states, etc. These resulting bins were subject to several rounds of the above assembly procedures.

Once gene bins were generated based upon sequence alignments, bins were clone joined based upon clone information. If the 5' sequence of one clone was present in one bin and the 3' sequence from the same clone was present in a different bin, it was likely that the two bins actually belonged together in a single bin. The resulting combined bins underwent assembly procedures to regenerate the consensus sequences.

The final assembled templates were subsequently annotated using the following procedure. Template sequences were analyzed using BLASTN (v2.0, NCBI) versus gbpri (GenBank version 128). "Hits" were defined as an exact match having from 95% local identity over 200 base pairs through 100% local identity over 100 base pairs, or a homolog match having an E-value, i.e. a probability score, of $\leq 1 \times 10^8$. The hits were subject to frameshift FASTx versus GENPEPT (GenBank version 128). (See Table 8). In this analysis, a homolog match was defined as having an E-value of $\leq 1 \times 10^8$. The assembly method used above was described in "System and Methods for Analyzing Biomolecular Sequences," U.S.S.N. 09/276,534, filed March 25, 1999, and the LIFESEQ Gold user manual (Incyte) both incorporated by reference herein.

Following assembly, template sequences were subjected to motif, BLAST, and functional analyses, and categorized in protein hierarchies using methods described in, e.g., "Database System Employing Protein Function Hierarchies for Viewing Biomolecular Sequence Data," U.S. Patent Number 6,023,659; "Relational Database for Storing Biomolecular Information," U.S.S.N. 08/947,845, filed October 9, 1997; "Project-Based Full-Length Biomolecular Sequence Database," U.S. Patent Number 5,953,727, filed March 6, 1997; and "Relational Database and System for Storing Information Relating to Biomolecular Sequences," U.S.S.N. 09/034,807, filed March 4, 1998, all of which are incorporated by reference herein.

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The template sequences were further analyzed by translating each template in all three forward reading frames and searching each translation against the Pfam database of hidden Markov model-based protein families and domains using the HMMER software package (available to the public from Washington University School of Medicine, St. Louis MO). Regions of templates which, when translated, contain similarity to Pfam consensus sequences are reported in Table 3, along with descriptions of Pfam protein domains and families. Only those Pfam hits with an E-value of $\leq 1 \times 10^{-3}$ are reported. (See also World Wide Web site http://pfam.wustl.edu/ for detailed descriptions of Pfam protein domains and families.)

Additionally, the template sequences were translated in all three forward reading frames, and each translation was searched against hidden Markov models for signal peptides using the HMMER software package. Construction of hidden Markov models and their usage in sequence analysis has been described. (See, for example, Eddy, S.R. (1996) Curr. Opin. Str. Biol. 6:361-365.) Only those signal peptide hits with a cutoff score of 11 bits or greater are reported. A cutoff score of 11 bits or greater corresponds to at least about 91-94% true-positives in signal peptide prediction. Template sequences were also translated in all three forward reading frames, and each translation was searched against TMHMMER, a program that uses a hidden Markov model (HMM) to delineate transmembrane segments on protein sequences and determine orientation (Sonnhammer, E.L. et al.

(1998) Proc. Sixth Intl. Conf. On Intelligent Systems for Mol. Biol., Glasgow et al., eds., The Am. Assoc. for Artificial Intelligence (AAAI) Press, Menlo Park, CA, and MIT Press, Cambridge, MA, pp. 175-182.) Regions of templates which, when translated, contain similarity to signal peptide or transmembrane consensus sequences are reported in Table 4.

The results of HMMER analysis as reported in Tables 3 and 4 may support the results of BLAST analysis as reported in Table 2 or may suggest alternative or additional properties of template-encoded polypeptides not previously uncovered by BLAST or other analyses.

Template sequences are further analyzed using the bioinformatics tools listed in Table 8, or using sequence analysis software known in the art such as MACDNASIS PRO software (Hitachi Software Engineering, South San Francisco CA) and LASERGENE software (DNASTAR).

Template sequences may be further queried against public databases such as the GenBank rodent, mammalian, vertebrate, prokaryote, and eukaryote databases.

The template sequences were translated to derive the corresponding longest open reading frame as presented by the polypeptide sequences as reported in Table 7. Alternatively, a polypeptide of the invention may begin at any of the methionine residues within the full length translated polypeptide. Polypeptide sequences were subsequently analyzed by querying against the GenBank protein database (GENPEPT, (GenBank version 128)). Full length polynucleotide sequences are also analyzed using MACDNASIS PRO software (Hitachi Software Engineering, South San Francisco CA) and LASERGENE software (DNASTAR). Polynucleotide and polypeptide sequence alignments are generated using default parameters specified by the CLUSTAL algorithm as incorporated into the MEGALIGN multisequence alignment program (DNASTAR), which also calculates the percent identity between aligned sequences.

Table 7 shows sequences with homology to the polypeptides of the invention as identified by BLAST analysis against the GenBank protein (GENPEPT) database. Column 1 shows the polypeptide sequence identification number (SEQ ID NO:) for the polypeptide segments of the invention. Column 2 shows the reading frame used in the translation of the polynucleotide sequences encoding the polypeptide segments. Column 3 shows the length of the translated polypeptide segments. Columns 4 and 5 show the start and stop nucleotide positions of the polynucleotide sequences encoding the polypeptide segments. Column 6 shows the GenBank identification number (GI Number) of the nearest GenBank homolog. Column 7 shows the probability score for the match between each polypeptide and its GenBank homolog. Column 8 shows the annotation of the GenBank homolog.

V. Analysis of Polynucleotide Expression

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Northern analysis is a laboratory technique used to detect the presence of a transcript of a gene and involves the hybridization of a labeled nucleotide sequence to a membrane on which RNAs from a particular cell type or tissue have been bound. (See, e.g., Sambrook, <u>supra</u>, ch. 7; Ausubel, 1995, <u>supra</u>, ch. 4 and 16.)

Analogous computer techniques applying BLAST were used to search for identical or related molecules in cDNA databases such as GenBank or LIFESEQ (Incyte Genomics). This analysis is much faster than multiple membrane-based hybridizations. In addition, the sensitivity of the computer search can be modified to determine whether any particular match is categorized as exact or similar. The basis of the search is the product score, which is defined as:

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BLAST Score x Percent Identity

5 x minimum {length(Seq. 1), length(Seq. 2)}

The product score takes into account both the degree of similarity between two sequences and the

length of the sequence match. The product score is a normalized value between 0 and 100, and is
calculated as follows: the BLAST score is multiplied by the percent nucleotide identity and the
product is divided by (5 times the length of the shorter of the two sequences). The BLAST score is
calculated by assigning a score of +5 for every base that matches in a high-scoring segment pair
(HSP), and -4 for every mismatch. Two sequences may share more than one HSP (separated by
gaps). If there is more than one HSP, then the pair with the highest BLAST score is used to calculate
the product score. The product score represents a balance between fractional overlap and quality in a
BLAST alignment. For example, a product score of 100 is produced only for 100% identity over the
entire length of the shorter of the two sequences being compared. A product score of 70 is produced
either by 100% identity and 70% overlap at one end, or by 88% identity and 100% overlap at the
other. A product score of 50 is produced either by 100% identity and 50% overlap at one end, or 79%
identity and 100% overlap.

VI. Tissue Distribution Profiling

A tissue distribution profile is determined for each template by compiling the cDNA library
tissue classifications of its component cDNA sequences. Each component sequence, is derived from
a cDNA library constructed from a human tissue. Each human tissue is classified into one of the
following categories: cardiovascular system; connective tissue; digestive system; embryonic
structures; endocrine system; exocrine glands; genitalia, female; genitalia, male; germ cells; hemic and
immune system; liver; musculoskeletal system; nervous system; pancreas; respiratory system; sense
organs; skin; stomatognathic system; unclassified/mixed; or urinary tract. Template sequences,

component sequences, and cDNA library/tissue information are found in the LIFESEQ GOLD database (Incyte Genomics, Palo Alto CA).

Table 6 shows the tissue distribution profile for the templates of the invention. For each template, the three most frequently observed tissue categories are shown in column 3, along with the percentage of component sequences belonging to each category. Only tissue categories with percentage values of $\geq 10\%$ are shown. A tissue distribution of "widely distributed" in column 3 indicates percentage values of < 10% in all tissue categories.

VII. Transcript Image Analysis

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Transcript images are generated as described in Seilhamer et al., "Comparative Gene Transcript Analysis," U.S. Patent Number 5,840,484, incorporated herein by reference.

VIII. Extension of Polynucleotide Sequences and Isolation of a Full-length cDNA

Oligonucleotide primers designed using an mddt of the Sequence Listing are used to extend the nucleic acid sequence. One primer is synthesized to initiate 5' extension of the template, and the other primer, to initiate 3' extension of the template. The initial primers may be designed using OLIGO 4.06 software (National Biosciences, Inc. (National Biosciences), Plymouth MN), or another appropriate program, to be about 22 to 30 nucleotides in length, to have a GC content of about 50% or more, and to anneal to the target sequence at temperatures of about 68°C to about 72°C. Any stretch of nucleotides which would result in hairpin structures and primer-primer dimerizations are avoided. Selected human cDNA libraries are used to extend the sequence. If more than one extension is necessary or desired, additional or nested sets of primers are designed.

High fidelity amplification is obtained by PCR using methods well known in the art. PCR is performed in 96-well plates using the PTC-200 thermal cycler (MJ Research). The reaction mix contains DNA template, 200 nmol of each primer, reaction buffer containing Mg²⁺, (NH₄)₂SO₄, and 8-mercaptoethanol, Taq DNA polymerase (Amersham Pharmacia Biotech), ELONGASE enzyme (Life Technologies), and Pfu DNA polymerase (Stratagene), with the following parameters for primer pair PCI A and PCI B: Step 1: 94°C, 3 min; Step 2: 94°C, 15 sec; Step 3: 60°C, 1 min; Step 4: 68°C, 2 min; Step 5: Steps 2, 3, and 4 repeated 20 times; Step 6: 68°C, 5 min; Step 7: storage at 4°C. In the alternative, the parameters for primer pair T7 and SK+ are as follows: Step 1: 94°C, 3 min; Step 2: 94°C, 15 sec; Step 3: 57°C, 1 min; Step 4: 68°C, 2 min; Step 5: Steps 2, 3, and 4 repeated 20 times; Step 6: 68°C, 5 min; Step 7: storage at 4°C.

The concentration of DNA in each well is determined by dispensing 100 μ l PICOGREEN quantitation reagent (0.25% (v/v); Molecular Probes) dissolved in 1X Tris-EDTA (TE) and 0.5 μ l of undiluted PCR product into each well of an opaque fluorimeter plate (Corning Incorporated (Corning),

Corning NY), allowing the DNA to bind to the reagent. The plate is scanned in a FLUOROSKAN II (Labsystems Oy) to measure the fluorescence of the sample and to quantify the concentration of DNA. A 5 μ l to 10 μ l aliquot of the reaction mixture is analyzed by electrophoresis on a 1 % agarose mini-gel to determine which reactions are successful in extending the sequence.

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The extended nucleotides are desalted and concentrated, transferred to 384-well plates, digested with CviJI cholera virus endonuclease (Molecular Biology Research, Madison WI), and sonicated or sheared prior to religation into pUC 18 vector (Amersham Pharmacia Biotech). For shotgun sequencing, the digested nucleotides are separated on low concentration (0.6 to 0.8%) agarose gels, fragments are excised, and agar digested with AGAR ACE (Promega). Extended clones are religated using T4 ligase (New England Biolabs, Inc., Beverly MA) into pUC 18 vector (Amersham Pharmacia Biotech), treated with Pfu DNA polymerase (Stratagene) to fill-in restriction site overhangs, and transfected into competent <u>E. coli</u> cells. Transformed cells are selected on antibiotic-containing media, individual colonies are picked and cultured overnight at 37°C in 384-well plates in LB/2x carbenicillin liquid media.

The cells are lysed, and DNA is amplified by PCR using Taq DNA polymerase (Amersham Pharmacia Biotech) and Pfu DNA polymerase (Stratagene) with the following parameters: Step 1: 94°C, 3 min; Step 2: 94°C, 15 sec; Step 3: 60°C, 1 min; Step 4: 72°C, 2 min; Step 5: steps 2, 3, and 4 repeated 29 times; Step 6: 72°C, 5 min; Step 7: storage at 4°C. DNA is quantified by PICOGREEN reagent (Molecular Probes) as described above. Samples with low DNA recoveries are reamplified using the same conditions as described above. Samples are diluted with 20% dimethysulfoxide (1:2, v/v), and sequenced using DYENAMIC energy transfer sequencing primers and the DYENAMIC DIRECT kit (Amersham Pharmacia Biotech) or the ABI PRISM BIGDYE Terminator cycle sequencing ready reaction kit (Applied Biosystems).

In like manner, the mddt is used to obtain regulatory sequences (promoters, introns, and enhancers) using the procedure above, oligonucleotides designed for such extension, and an appropriate genomic library.

IX. Labeling of Probes and Southern Hybridization Analyses

Hybridization probes derived from the mddt of the Sequence Listing are employed for screening cDNAs, mRNAs, or genomic DNA. The labeling of probe nucleotides between 100 and 1000 nucleotides in length is specifically described, but essentially the same procedure may be used with larger cDNA fragments. Probe sequences are labeled at room temperature for 30 minutes using a T4 polynucleotide kinase, γ^{32} P-ATP, and 0.5X One-Phor-All Plus (Amersham Pharmacia Biotech) buffer and purified using a ProbeQuant G-50 Microcolumn (Amersham Pharmacia Biotech). The

probe mixture is diluted to 10^7 dpm/ μ g/ml hybridization buffer and used in a typical membrane-based hybridization analysis.

The DNA is digested with a restriction endonuclease such as Eco RV and is electrophoresed through a 0.7% agarose gel. The DNA fragments are transferred from the agarose to nylon membrane (NYTRAN Plus, Schleicher & Schuell, Inc., Keene NH) using procedures specified by the manufacturer of the membrane. Prehybridization is carried out for three or more hours at 68°C, and hybridization is carried out overnight at 68°C. To remove non-specific signals, blots are sequentially washed at room temperature under increasingly stringent conditions, up to 0.1x saline sodium citrate (SSC) and 0.5% sodium dodecyl sulfate. After the blots are placed in a PHOSPHORIMAGER cassette (Molecular Dynamics) or are exposed to autoradiography film, hybridization patterns of standard and experimental lanes are compared. Essentially the same procedure is employed when screening RNA.

X. Chromosome Mapping of mddt

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The cDNA sequences which were used to assemble SEQ ID NO:1-396 are compared with sequences from the Incyte LIFESEQ database and public domain databases using BLAST and other implementations of the Smith-Waterman algorithm. Sequences from these databases that match SEO ID NO:1-396 are assembled into clusters of contiguous and overlapping sequences using assembly algorithms such as PHRAP (Table 8). Radiation hybrid and genetic mapping data available from public resources such as the Stanford Human Genome Center (SHGC), Whitehead Institute for Genome Research (WIGR), and Généthon are used to determine if any of the clustered sequences have been previously mapped. Inclusion of a mapped sequence in a cluster will result in the assignment of all sequences of that cluster, including its particular SEQ ID NO:, to that map location. The genetic map locations of SEQ ID NO:1-396 are described as ranges, or intervals, of human chromosomes. The map position of an interval, in centiMorgans, is measured relative to the terminus of the chromosome's p-arm. (The centiMorgan (cM) is a unit of measurement based on recombination frequencies between chromosomal markers. On average, 1 cM is roughly equivalent to 1 megabase (Mb) of DNA in humans, although this can vary widely due to hot and cold spots of recombination.) The cM distances are based on genetic markers mapped by Généthon which provide boundaries for radiation hybrid markers whose sequences were included in each of the clusters.

XI. Microarray Analysis

Probe Preparation from Tissue or Cell Samples

Total RNA is isolated from tissue samples using the guanidinium thiocyanate method and polyA+RNA is purified using the oligo (dT) cellulose method. Each polyA+RNA sample is reverse

transcribed using MMLV reverse-transcriptase, 0.05 pg/µl oligo-dT primer (21mer), 1X first strand buffer, 0.03 units/µl RNase inhibitor, 500 µM dATP, 500 µM dGTP, 500 µM dTTP, 40 µM dCTP, 40 μM dCTP-Cy3 (BDS) or dCTP-Cy5 (Amersham Pharmacia Biotech). The reverse transcription reaction is performed in a 25 ml volume containing 200 ng polyA+ RNA with GEMBRIGHT kits (Incyte). Specific control polyA+ RNAs are synthesized by in vitro transcription from non-coding yeast genomic DNA (W. Lei, unpublished). As quantitative controls, the control mRNAs at 0.002 ng, 0.02 ng, 0.2 ng, and 2 ng are diluted into reverse transcription reaction at ratios of 1:100,000, 1:10,000, 1:1000, 1:100 (w/w) to sample mRNA respectively. The control mRNAs are diluted into reverse transcription reaction at ratios of 1:3, 3:1, 1:10, 10:1, 1:25, 25:1 (w/w) to sample mRNA differential expression patterns. After incubation at 37°C for 2 hr, each reaction sample (one with Cy3 and another with Cy5 labeling) is treated with 2.5 ml of 0.5M sodium hydroxide and incubated for 20 minutes at 85°C to the stop the reaction and degrade the RNA. Probes are purified using two successive CHROMA SPIN 30 gel filtration spin columns (CLONTECH Laboratories, Inc. (CLONTECH), Palo Alto CA) and after combining, both reaction samples are ethanol precipitated using 1 ml of glycogen (1 mg/ml), 60 ml sodium acetate, and 300 ml of 100% ethanol. The probe is then dried to completion using a SpeedVAC (Savant Instruments Inc., Holbrook NY) and resuspended in 14 μl 5X SSC/0.2% SDS.

Microarray Preparation

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Sequences of the present invention are used to generate array elements. Each array element is amplified from bacterial cells containing vectors with cloned cDNA inserts. PCR amplification uses primers complementary to the vector sequences flanking the cDNA insert. Array elements are amplified in thirty cycles of PCR from an initial quantity of 1-2 ng to a final quantity greater than 5 μ g. Amplified array elements are then purified using SEPHACRYL-400 (Amersham Pharmacia Biotech).

Purified array elements are immobilized on polymer-coated glass slides. Glass microscope slides (Corning) are cleaned by ultrasound in 0.1% SDS and acetone, with extensive distilled water washes between and after treatments. Glass slides are etched in 4% hydrofluoric acid (VWR Scientific Products Corporation (VWR), West Chester, PA), washed extensively in distilled water, and coated with 0.05% aminopropyl silane (Sigma) in 95% ethanol. Coated slides are cured in a 110°C oven.

Array elements are applied to the coated glass substrate using a procedure described in US Patent No. 5,807,522, incorporated herein by reference. 1 μ l of the array element DNA, at an average concentration of 100 ng/ μ l, is loaded into the open capillary printing element by a high-speed robotic apparatus. The apparatus then deposits about 5 nl of array element sample per slide.

Microarrays are UV-crosslinked using a STRATALINKER UV-crosslinker (Stratagene). Microarrays are washed at room temperature once in 0.2% SDS and three times in distilled water. Non-specific binding sites are blocked by incubation of microarrays in 0.2% casein in phosphate buffered saline (PBS) (Tropix, Inc., Bedford, MA) for 30 minutes at 60°C followed by washes in 0.2% SDS and distilled water as before.

Hybridization

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Hybridization reactions contain 9 μ l of probe mixture consisting of 0.2 μ g each of Cy3 and Cy5 labeled cDNA synthesis products in 5X SSC, 0.2% SDS hybridization buffer. The probe mixture is heated to 65°C for 5 minutes and is aliquoted onto the microarray surface and covered with an 1.8 cm² coverslip. The arrays are transferred to a waterproof chamber having a cavity just slightly larger than a microscope slide. The chamber is kept at 100% humidity internally by the addition of 140 μ l of 5x SSC in a corner of the chamber. The chamber containing the arrays is incubated for about 6.5 hours at 60°C. The arrays are washed for 10 min at 45°C in a first wash buffer (1X SSC, 0.1% SDS), three times for 10 minutes each at 45°C in a second wash buffer (0.1X SSC), and dried.

Detection

Reporter-labeled hybridization complexes are detected with a microscope equipped with an Innova 70 mixed gas 10 W laser (Coherent, Inc., Santa Clara CA) capable of generating spectral lines at 488 nm for excitation of Cy3 and at 632 nm for excitation of Cy5. The excitation laser light is focused on the array using a 20X microscope objective (Nikon, Inc., Melville NY). The slide containing the array is placed on a computer-controlled X-Y stage on the microscope and raster-scanned past the objective. The 1.8 cm x 1.8 cm array used in the present example is scanned with a resolution of 20 micrometers.

In two separate scans, a mixed gas multiline laser excites the two fluorophores sequentially. Emitted light is split, based on wavelength, into two photomultiplier tube detectors (PMT R1477, Hamamatsu Photonics Systems, Bridgewater NJ) corresponding to the two fluorophores. Appropriate filters positioned between the array and the photomultiplier tubes are used to filter the signals. The emission maxima of the fluorophores used are 565 nm for Cy3 and 650 nm for Cy5. Each array is typically scanned twice, one scan per fluorophore using the appropriate filters at the laser source, although the apparatus is capable of recording the spectra from both fluorophores simultaneously.

The sensitivity of the scans is typically calibrated using the signal intensity generated by a cDNA control species added to the probe mix at a known concentration. A specific location on the array contains a complementary DNA sequence, allowing the intensity of the signal at that location to

be correlated with a weight ratio of hybridizing species of 1:100,000. When two probes from different sources (e.g., representing test and control cells), each labeled with a different fluorophore, are hybridized to a single array for the purpose of identifying genes that are differentially expressed, the calibration is done by labeling samples of the calibrating cDNA with the two fluorophores and adding identical amounts of each to the hybridization mixture.

The output of the photomultiplier tube is digitized using a 12-bit RTI-835H analog-to-digital (A/D) conversion board (Analog Devices, Inc., Norwood, MA) installed in an IBM-compatible PC computer. The digitized data are displayed as an image where the signal intensity is mapped using a linear 20-color transformation to a pseudocolor scale ranging from blue (low signal) to red (high signal). The data is also analyzed quantitatively. Where two different fluorophores are excited and measured simultaneously, the data are first corrected for optical crosstalk (due to overlapping emission spectra) between the fluorophores using each fluorophore's emission spectrum.

A grid is superimposed over the fluorescence signal image such that the signal from each spot is centered in each element of the grid. The fluorescence signal within each element is then integrated to obtain a numerical value corresponding to the average intensity of the signal. The software used for signal analysis is the GEMTOOLS gene expression analysis program (Incyte).

XII. Complementary Nucleic Acids

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Sequences complementary to the mddt are used to detect, decrease, or inhibit expression of
the naturally occurring nucleotide. The use of oligonucleotides comprising from about 15 to 30 base
pairs is typical in the art. However, smaller or larger sequence fragments can also be used.

Appropriate oligonucleotides are designed from the mddt using OLIGO 4.06 software (National
Biosciences) or other appropriate programs and are synthesized using methods standard in the art or
ordered from a commercial supplier. To inhibit transcription, a complementary oligonucleotide is
designed from the most unique 5' sequence and used to prevent transcription factor binding to the
promoter sequence. To inhibit translation, a complementary oligonucleotide is designed to prevent
ribosomal binding and processing of the transcript.

XIII. Expression of MDDT

Expression and purification of MDDT is accomplished using bacterial or virus-based expression systems. For expression of MDDT in bacteria, cDNA is subcloned into an appropriate vector containing an antibiotic resistance gene and an inducible promoter that directs high levels of cDNA transcription. Examples of such promoters include, but are not limited to, the *trp-lac* (*tac*) hybrid promoter and the T5 or T7 bacteriophage promoter in conjunction with the *lac* operator regulatory element. Recombinant vectors are transformed into suitable bacterial hosts, e.g.,

BL21(DE3). Antibiotic resistant bacteria express MDDT upon induction with isopropyl beta-D-thiogalactopyranoside (IPTG). Expression of MDDT in eukaryotic cells is achieved by infecting insect or mammalian cell lines with recombinant Autographica californica nuclear polyhedrosis virus (AcMNPV), commonly known as baculovirus. The nonessential polyhedrin gene of baculovirus is replaced with cDNA encoding MDDT by either homologous recombination or bacterial-mediated transposition involving transfer plasmid intermediates. Viral infectivity is maintained and the strong polyhedrin promoter drives high levels of cDNA transcription. Recombinant baculovirus is used to infect Spodoptera frugiperda (Sf9) insect cells in most cases, or human hepatocytes, in some cases. Infection of the latter requires additional genetic modifications to baculovirus. (See e.g., Engelhard, supra; and Sandig, supra.)

In most expression systems, MDDT is synthesized as a fusion protein with, e.g., glutathione Stransferase (GST) or a peptide epitope tag, such as FLAG or 6-His, permitting rapid, single-step, affinity-based purification of recombinant fusion protein from crude cell lysates. GST, a 26-kilodalton enzyme from Schistosoma japonicum, enables the purification of fusion proteins on immobilized glutathione under conditions that maintain protein activity and antigenicity (Amersham Pharmacia Biotech). Following purification, the GST moiety can be proteolytically cleaved from MDDT at specifically engineered sites. FLAG, an 8-amino acid peptide, enables immunoaffinity purification using commercially available monoclonal and polyclonal anti-FLAG antibodies (Eastman Kodak Company, Rochester NY). 6-His, a stretch of six consecutive histidine residues, enables purification on metal-chelate resins (QIAGEN). Methods for protein expression and purification are discussed in Ausubel (1995, supra, Chapters 10 and 16). Purified MDDT obtained by these methods can be used directly in the following activity assay.

XIV. Demonstration of MDDT Activity

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MDDT, or biologically active fragments thereof, are labeled with ¹²⁵I Bolton-Hunter reagent. (See, e.g., Bolton, A.E. and W.M. Hunter (1973) Biochem. J. 133:529-539.) Candidate molecules previously arrayed in the wells of a multi-well plate are incubated with the labeled MDDT, washed, and any wells with labeled MDDT complex are assayed. Data obtained using different concentrations of MDDT are used to calculate values for the number, affinity, and association of MDDT with the candidate molecules.

Alternatively, molecules interacting with MDDT are analyzed using the yeast two-hybrid system as described in Fields, S. and O. Song (1989) Nature 340:245-246, or using commercially available kits based on the two-hybrid system, such as the MATCHMAKER system (CLONTECH).

MDDT may also be used in the PATHCALLING process (CuraGen Corp., New Haven CT) which employs the yeast two-hybrid system in a high-throughput manner to determine all interactions

between the proteins encoded by two large libraries of genes (Nandabalan, K. et al. (2000) U.S. Patent No. 6,057,101).

XV. Functional Assays

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MDDT function is assessed by expressing mddt at physiologically elevated levels in mammalian cell culture systems. cDNA is subcloned into a mammalian expression vector containing a strong promoter that drives high levels of cDNA expression. Vectors of choice include pCMV SPORT (Life Technologies) and pCR3.1 (Invitrogen Corporation, Carlsbad CA), both of which contain the cytomegalovirus promoter. 5-10 μ g of recombinant vector are transiently transfected into a human cell line, preferably of endothelial or hematopoietic origin, using either liposome formulations or electroporation. 1-2 μ g of an additional plasmid containing sequences encoding a marker protein are co-transfected.

Expression of a marker protein provides a means to distinguish transfected cells from nontransfected cells and is a reliable predictor of cDNA expression from the recombinant vector. Marker proteins of choice include, e.g., Green Fluorescent Protein (GFP; CLONTECH), CD64, or a CD64-GFP fusion protein. Flow cytometry (FCM), an automated laser optics-based technique, is used to identify transfected cells expressing GFP or CD64-GFP and to evaluate the apoptotic state of the cells and other cellular properties.

FCM detects and quantifies the uptake of fluorescent molecules that diagnose events preceding or coincident with cell death. These events include changes in nuclear DNA content as measured by staining of DNA with propidium iodide; changes in cell size and granularity as measured by forward light scatter and 90 degree side light scatter; down-regulation of DNA synthesis as measured by decrease in bromodeoxyuridine uptake; alterations in expression of cell surface and intracellular proteins as measured by reactivity with specific antibodies; and alterations in plasma membrane composition as measured by the binding of fluorescein-conjugated Annexin V protein to the cell surface. Methods in flow cytometry are discussed in Ormerod, M. G. (1994) Flow Cytometry, Oxford, New York NY.

The influence of MDDT on gene expression can be assessed using highly purified populations of cells transfected with sequences encoding MDDT and either CD64 or CD64-GFP. CD64 and CD64-GFP are expressed on the surface of transfected cells and bind to conserved regions of human immunoglobulin G (IgG). Transfected cells are efficiently separated from nontransfected cells using magnetic beads coated with either human IgG or antibody against CD64 (DYNAL, Inc., Lake Success NY). mRNA can be purified from the cells using methods well known by those of skill in the art. Expression of mRNA encoding MDDT and other genes of interest can be analyzed by northern analysis or microarray techniques.

XVI. Production of Antibodies

MDDT substantially purified using polyacrylamide gel electrophoresis (PAGE; see, e.g., Harrington, M.G. (1990) Methods Enzymol. 182:488-495), or other purification techniques, is used to immunize rabbits and to produce antibodies using standard protocols.

Alternatively, the MDDT amino acid sequence is analyzed using LASERGENE software (DNASTAR) to determine regions of high immunogenicity, and a corresponding peptide is synthesized and used to raise antibodies by means known to those of skill in the art. Methods for selection of appropriate epitopes, such as those near the C-terminus or in hydrophilic regions are well described in the art. (See, e.g., Ausubel, 1995, supra, Chapter 11.)

Typically, peptides 15 residues in length are synthesized using an ABI 431A peptide synthesizer (Applied Biosystems) using fmoc-chemistry and coupled to KLH (Sigma) by reaction with N-maleimidobenzoyl-N-hydroxysuccinimide ester (MBS) to increase immunogenicity. (See, e.g., Ausubel, supra.) Rabbits are immunized with the peptide-KLH complex in complete Freund's adjuvant. Resulting antisera are tested for antipeptide activity by, for example, binding the peptide to plastic, blocking with 1% BSA, reacting with rabbit antisera, washing, and reacting with radio-iodinated goat anti-rabbit IgG. Antisera with antipeptide activity are tested for anti-MDDT activity using protocols well known in the art, including ELISA, RIA, and immunoblotting.

XVII. Purification of Naturally Occurring MDDT Using Specific Antibodies

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Naturally occurring or recombinant MDDT is substantially purified by immunoaffinity chromatography using antibodies specific for MDDT. An immunoaffinity column is constructed by covalently coupling anti-MDDT antibody to an activated chromatographic resin, such as CNBr-activated SEPHAROSE (Amersham Pharmacia Biotech). After the coupling, the resin is blocked and washed according to the manufacturer's instructions.

Media containing MDDT are passed over the immunoaffinity column, and the column is washed under conditions that allow the preferential absorbance of MDDT (e.g., high ionic strength buffers in the presence of detergent). The column is eluted under conditions that disrupt antibody/MDDT binding (e.g., a buffer of pH 2 to pH 3, or a high concentration of a chaotrope, such as urea or thiocyanate ion), and MDDT is collected.

All publications and patents mentioned in the above specification are herein incorporated by reference. Various modifications and variations of the described method and system of the invention will be apparent to those skilled in the art without departing from the scope and spirit of the invention. Although the invention has been described in connection with specific preferred embodiments, it should be understood that the invention as claimed should not be unduly limited to such specific embodiments. Indeed, various modifications of the above-described modes for carrying out the invention which are obvious to those skilled in the field of molecular biology or related fields are intended to be within the scope of the following claims.

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4	LG:1051891.34:2001MAR30	400	LG:1051891.34.orf1:2001MAR30
5	LG:1089626.1:2001MAR30	401	LG:1089626.1.orf3;2001MAR30
6	LG:1101416.6:2001MAR30	402	LG:1101416.6.orf2;2001MAR30
7	LG:1295974.1:2001MAR30	403	LG:1295974.1.orf2:2001MAR30
8 .	LG:1400572.2:2001MAR30	404	LG:1400572.2.orf1:2001MAR30
9	LG:1446621.1:2001MAR30	405	LG:1446621.1.orf3:2001MAR30
10	LG:1499752.1:2001MAR30	406	LG:1499752.1.orf3:2001MAR30
11	LG:1503044.7:2001MAR30	407	LG:1503044.7.orf1:2001MAR30
12	LG:1503588.1:2001MAR30	408	LG:1503588.1.orf1:2001MAR30
13	LG:1503589.2:2001MAR30	409	LG:1503589.2.orf3:2001MAR30
14	LG:1506339.4:2001MAR30	410	LG:1506339.4.orf2:2001MAR30
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54	LG:376275.1:2001MAR30	450	LG:376275.1.orf3:2001MAR30
55	LG:399281.3:2001MAR30	451	LG:399281.3.orf3:2001MAR30
56	LG:404921.10:2001MAR30	452	LG:404921.10.orf2:2001MAR30
57	LG:444677.34:2001MAR30	453	LG:444677.34.orf1:2001MAR30
58	LG:968691.1:2001MAR30	454	LG:968691.1.orf1:2001MAR30
59	LG:983862.1:2001MAR30	455	LG:983862.1.orf1:2001MAR30
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292	LI:2121610.13:2001MAY17	688	LI:2121610.13.orf3:2001MAY17
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294	LI:2198562.3:2001MAY17	690	LI:2198562.3.orf2:2001MAY17
295	LI:2209684.5:2001MAY17	691	LI:2209684.5.orf2:2001MAY17
296	LI:222795.28:2001MAY17	692	U:222795.28.orf1:2001MAY17
297	LI:228273.25:2001MAY17	693	LI:228273.25.orf2:2001MAY17
298	LI:232386.31:2001MAY17	694	LI:232386.31.orf3:2001MAY17
299	LI:233089.2:2001MAY17	695	U:233089.2.orf2:2001MAY17
300	LI:240641.10:2001MAY17	696	U:240641.10.orf2:2001MAY17

SEQ ID NO:	Template ID	SEQ ID NO:	ORF ID
301	LI:243871.4:2001MAY17	697	LI:243871.4.orf2:2001MAY17
302	LI:245597.7:2001MAY17	698	LI:245597.7.orf2:2001MAY17
303	LI:256009.31:2001MAY17	699	U:256009.31.orf1:2001MAY17
304	U:262221.1:2001MAY17	700	LI:262221.1.orf3:2001MAY17
305	LI:332957.8:2001MAY17	701	LI:332957.8.orf3:2001MAY17
306	U:335352.13:2001MAY17	702	LI:335352.13.orf2:2001MAY17
307	LI:343844.7:2001MAY17	703	LI:343844.7.orf3:2001MAY17
308	LI:344528.1:2001MAY17	704	U:344528.1.orf1:2001MAY17
309	LI:374578.27:2001MAY17	705	LI:374578.27.orf1:2001MAY17
310	LI:381993.13:2001MAY17	706	LI:381993.13.orf3:2001MAY17
311	LI:400373.2:2001MAY17	707	LI:400373.2.orf1:2001MAY17
312	LI:400963.6:2001MAY17	708	LI:400963.6.orf3:2001MAY17
313	LI:404874.8:2001MAY17	709	LI:404874.8.orf2:2001MAY17
314	LI:405158.18:2001MAY17	710	LI:405158.18.orf2:2001MAY17
315	LI:405889.22:2001MAY17	711	LI:405889.22.orf2:2001MAY17
316	LI:411151.31:2001MAY17	712	LI:411151.31.orf1:2001MAY17
317	LI:411313.51:2001MAY17	713	LI:411313.51.orf2:2001MAY17
318	LI:417127.1:2001MAY17	714	LI:417127.1.orf1:2001MAY17
319	LI:429817.44:2001MAY17	715	LI:429817.44.orf3:2001MAY17
320	LI:474134.23:2001MAY17	716	LI:474134.23.orf3:2001MAY17
321	LI:475378.3:2001MAY17	717	LI:475378.3.orf2:2001MAY17
. 322	LI:749588.15:2001MAY17	. 718	LI:749588.15.orf3:2001MAY17
323	LI:757736.17:2001MAY17	· 719	Ц:757736.17.orf1:2001MAY17
324	LI:817278.4:2001MAY17	720	LI:817278.4.orf2:2001MAY17
325	LI:027320.5:2001MAY17	721	LI:027320.5.orf2:2001MAY17
326	LI:204635.5:2001MAY17	722	LI:204635.5.orf2:2001MAY17
327	LI:215532.38:2001MAY17	723	LI:215532.38.orf2:2001MAY17
328	LI:228319.6:2001MAY17	724	LI:228319.6.orf2:2001MAY17
329	LI:236589.24:2001MAY17	725	LI:236589.24.orf2:2001MAY17
330	LI:247444.3:2001MAY17	726	LI:247444.3.orf2:2001MAY17
331	LI:332404.20:2001MAY17	727	Ц:332404.20.orf3:2001MAY17
332	LG: 1088459.4:2001JUN22	728	LG:1088459.4.orf2:2001JUN22
333	LG:1501495.1:2001JUN22	729	LG:1501495.1.orf1:2001JUN22
334	LG:334284.10:2001JUN22	730	LG:334284.10.orf1:2001JUN22
335	LG:345279.19:2001JUN22	731 -	LG:345279.19.orf1:2001JUN22
336	LG:7689681.1:2001JUN22	732	LG:7689681.1.orf1:2001JUN22
337	LG:7690093.1:2001JUN22	733	LG:7690093.1.orf3:2001JUN22
338	LG:7690175.3:2001JUN22	734	LG:7690175.3.orf2:2001JUN22
339	LG:7697128.1:2001JUN22	735	LG:7697128.1.orf2:2001JUN22
340	LG:006394.20:2001JUN22	736	LG:006394.20.orf1:2001JUN22
341	LG:1012069.1:2001JUN22	737	LG:1012069.1.orf1:2001JUN22
342	LG:104533.11:2001JUN22	738	LG:104533.11.orf2:2001JUN22
343	LG:1045853.23:2001JUN22	739	LG:1045853.23.orf1:2001JUN22
344	LG:1081017.8:2001JUN22	740	LG:1081017.8.orf3:2001JUN22
345	LG:1090358.6:2001JUN22	741	LG:1090358.6.orf3:2001JUN22
346	LG:1135312.7:2001JUN22	742	LG:1135312.7.orf2:2001JUN22
347	LG:1328501.2:2001JUN22	743	LG:1328501.2.orf1:2001JUN22
348	LG:133095.1:2001JUN22	744	LG:133095.1.orf3:2001JUN22
349	LG:135379.5:2001JUN22	745	LG:135379.5.orf1:2001JUN22
350	LG:1365581.3:2001JUN22	746	LG:1365581.3.orf1:2001JUN22

SEQ ID NO:	Template ID	SEQ ID NO:	ORF ID
351	LG:1383156.20:2001JUN22	747	LG:1383156.20.orf2:2001JUN22
352	LG:1501767.18:2001JUN22	748	LG:1501767.18.orf3:2001JUN22
353	LG:1501890.8:2001JUN22	749	LG:1501890.8.orf1:2001JUN22
354	LG:203434.23:2001JUN22	750	LG:203434.23.orf2:2001JUN22
355	LG:204724.5:2001JUN22	751	LG:204724.5.orf3:2001JUN22
356	LG:257107.16:2001JUN22	752	LG:257107.16.orf3:2001JUN22
357	LG:353530.4:2001JUN22	753	LG:353530.4.orf1:2001JUN22
358	LG:7683573.3:2001JUN22 LG:7684224.1:2001JUN22	754 755	LG:7683573.3.orf1:2001JUN22
359 360	LG:7690365.2:2001JUN22	755 756	LG:7684224.1.orf1:2001JUN22 LG:7690365.2.orf3:2001JUN22
361	LG:968691.1:2001JUN22	757	LG:968691.1.orf1:2001JUN22
362	LG:983076.7:2001JUN22	757 758	LG:983076.7.orf2:2001JUN22
363	LG:986291.1:2001JUN22	759	LG:986291.1.orf1:2001JUN22
364	LG:990347.41:2001JUN22	760	LG:990347.41.orf3:2001JUN22
365	LG:998305.4:2001JUN22	761	LG:998305.4.orf3:2001JUN22
366	LG:463420.16:2001JUN22	762	LG:463420.16.orf1:2001JUN22
367	LG:979059.3:2001JUN22	763	LG:979059.3.orf1:2001JUN22
368	LG:1045509.22:2001JUN22	764	LG:1045509.22.orf2:2001JUN22
369	LG:246935.4:2001JUN22	765	LG:246935.4.orf1:2001JUN22
370	LG:321069.2:2001JUN22	766	LG:321069.2.orf1:2001JUN22
371	LG:346724.14:2001JUN22	767	LG:346724.14.orf1:2001JUN22
372 373	LG:411043.3:2001JUN22 LG:978620.7:2001JUN22	768 769	LG:411043.3.orf2:2001JUN22
373 374	LG:982784.1:2001JUN22	709 770	LG:978620.7.orf3:2001JUN22 LG:982784.1.orf3:2001JUN22
37 5	LG:007574.21:2001JUN22	. 771	LG:007574.21.orf1:2001JUN22
376	LG:013856.18:2001JUN22	772	LG:013856.18.orf2:2001JUN22
377	LG:027320.7:2001JUN22		LG:027320.7.orf2:2001JUN22
378	LG:077967.9:2001JUN22	774	LG:077967.9.orf1:2001JUN22
379	LG:128475.9:2001JUN22	775 .	LG:128475.9.orf2:2001JUN22
380	LG:1398104.15:2001JUN22	776	LG:1398104.15.orf3:2001JUN22
381	LG:1454018.10:2001JUN22	777	LG:1454018.10.orf3:2001JUN22
382	LG:221548.14:2001JUN22	778	LG:221548.14.orf2:2001JUN22
383	LG:227500.5:2001JUN22	779	LG:227500.5.orf2:2001JUN22
384 385	LG:228273.22:2001JUN22 LG:235432.1:2001JUN22	780	LG:228273.22.orf2:2001JUN22
386	LG:236904.20:2001JUN22	781 782	LG:235432.1.orf1:2001JUN22 LG:236904.20.orf3:2001JUN22
387	LG:253193.21:2001JUN22	783	LG:253193.21.orf2:2001JUN22
388	LG:332161.3:2001JUN22	784	LG:332161.3.orf2:2001JUN22
389	LG:332923.5:2001JUN22	785	LG:332923.5.orf2:2001JUN22
390	LG:343500.27:2001JUN22	786	LG:343500.27.orf3:2001JUN22
391	LG:369703.9:2001JUN22	787	LG:369703.9.orf1:2001JUN22
392	LG:415378.3:2001JUN22	788	LG:415378.3.orf1:2001JUN22
393	LG:458583.1:2001JUN22	789	LG:458583.1.orf1:2001JUN22
394	LG:7690373.1:2001JUN22	790	LG:7690373.1.orf1:2001JUN22
395	LG:898324.13:2001JUN22	791	LG:898324.13.orf1:2001JUN22
396	LG:979167.5:2001JUN22	792	LG:979167.5.orf3:2001JUN22

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Annotation		Unknown (protein for IMAGE:3352566) (Homo sapiens)	unnamed protein product (Homo saplens)	ZNF43 (Homo saplens)	unnamed protein product (Homo sapiens)	40S ribosomal protein S12 (Sus scrofa)	ferritin heavy chain (Mus musculus)	hypothetical protein (Homo sapiens)	KIAA1473 protein (Homo sapiens)	thymosin beta-10 (Homo sapiens)	putative Rabs GDP/GTP exchange factor homologue (Homo sapiens)	KIAA1473 protein (Homo sapiens)	unnamed protein product (Homo saplens)	Unknown (protein for MGC:20302) (Homo sapiens)	unnamed protein product (Homo saplens)	putative (Mus musculus)	Bax beta (Homo sapiens)	unnamed protein product (Homo sapiens)	bA14C22.1 (novel protein similar to lysozyme) (Homo sapiens)	Similar to PCTAIRE-motif protein kinase 3 (Homo sapiens)	hypothetical protein (Homo sapiens)	ESTs D15590(C0900), D48950(S15542), D22684(C0900) correspond to a region	of the predicted gene.~Similar to Arabidopsis thaliana 60S ribosomal	protein L11A (L16A). (P42795) (Oryza sativa)	R27945_1 (Homo saplens)	putative (Mus musculus)	MORN-domain protein (Leishmania major)	hypothetical protein (Homo sapiens)	EGF-related protein SCUBE1 (Mus musculus)	AD037 (Homo sapiens)	CUB and sushi multiple domains 1 protein (Homo sapiens)
Probability Score	1.00E-112	2.00E-31	6.00E-49	0		4.00E-47	1.00E-104	2.00E-62	2.00E-38	2.00E-18	1.00E-117	1.00E-38	1.00E-162	1.00E-124	2.00E-60	1.00E-135	1.00E-127	0	4.00E-76	3.00E-94	0	5.00E-88			0	5.00E-97	6.00E-17	1.00E-128	0	1.00E-146	Ö
GI Number F	_	912652727	g16551755	g38032	g16549180	g872315	g485373	g12052983	g7959207	9339697	g15929821	g7959207	g16552245	g17512041	g12310941	g12843135	g388168	g15209690	g15717944	g15079361	g14149068	g7340874			g2689446	g12847061	g15487218	g6807718	g10998440	g12005908	g14794726
Template ID	LG:036272.1:2001MAR30	LG:093337.3:2001MAR30	LG:1049927.6:2001MAR30	LG:1051891.34:2001MAR30	LG:1089626.1:2001MAR30	LG:1101416.6:2001MAR30	LG:1295974.1:2001MAR30	LG:1400572.2:2001MAR30	LG:1446621.1:2001MAR30	LG:1499752.1:2001MAR30	LG:1503044.7:2001MAR30	LG:1503588.1:2001MAR30	LG:1503589.2:2001MAR30	LG:1506339.4:2001MAR30	LG:220648.6:2001MAR30	LG:236654.1:2001MAR30	LG:237699.26:2001MAR30	LG:311541.16:2001MAR30	LG:335923.7:2001MAR30	LG:350342.14:2001MAR30	LG:369301.32:2001MAR30	LG:452089.1:2001MAR30			LG:454087.3:2001MAR30	LG:466302.1:2001MAR30	LG:474267.1:2001MAR30	LG:995613.10:2001MAR30	LG:011843.5:2001MAR30	LG:075904.32:2001MAR30	LG:1004781.3:2001MAR30
SEQ ID NO:	_	7	ო	4	9	•	7	∞	٥	9	1.1	12	13	14	15	16	17	18	<u>٥</u>	20	12	22			23	24	25	50	27	28	\$

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Annotation F25965_3 (Homo sapiens) myosin phosphatase targeting subunit 3 MYPT3 (Mus musculus) unnamed protein product (Homo sapiens) UDP-glucuronosyltransferase (EC 2.4.1.17) (Homo sapiens) KRAB zinc finger protein (Homo sapiens) KIAA0294 (Homo sapiens)	CG9996 gene product (Drosophila melanogaster) unnamed protein product (Homo saplens) Wilm's tumor-related protein (Homo saplens) putative (Mus musculus) putative (Mus musculus)	a disintegrin-like and metalloprotease with thrombospondin type 1 motif 14 precursor (Homo sapiens) dJ327J16.3 (supported by GENSCAN, FGENES and GENEWISE) (Homo sapiens) polydom protein (Mus musculus) E1b 55k protein (transformation) (Human adenovirus type 5)	purine nucleotide binding protein (Mus musculus) Unknown (protein for MGC:20847) (Homo sapiens) putative (Mus musculus) KIAA0478 protein (Homo sapiens) putative (Mus musculus) match to EST AA361117 (NID:g2013436) (Homo sapiens)	beta cysteine string protein (Homo sapiens) KIAA1466 protein (Homo sapiens) R31155_1 (Homo sapiens) KIAA0379 protein (Homo sapiens) Similar to hypothetical protein DKFZp434LD718 (Mus musculus) Unknown (protein for MGC:15165) (Homo sapiens) kelch-like protein KLHL6 (Homo sapiens)
Probability Score 00 1.00E-179 7.00E-34 5.00E-69	1.00E-89 3.00E-90 3.00E-40 0 3.00E-79	0 . 1.00E-120 0	0 0 0 0 3.00E-81	1.00E-119 2.00E-70 6.00E-59 1.00E-151 0 2.00E-59 1.00E-108
GI Number g2477513 g14307916 g7019945 g340080 g14348588 g2224529	g7301264 g13121981 g190814 g12847582 g12832255	g1/483854 g4160198 g11177164 g58491	g1174187 g15559603 g12836052 g3413918 g12842288 g3900848 g12081909	g14334177 g7959193 g6249687 g6634025 g16741323 g14424793
Template ID LG:1041807.8:2001MAR30 LG:104448.2:2001MAR30 LG:1080598.9:2001MAR30 LG:1081017.1:2001MAR30 LG:1083120.2:2001MAR30 LG:1097492.12:2001MAR30	LG:118834.9:2001MAR30 LG:1227408.25:2001MAR30 LG:1326953.1:2001MAR30 LG:1397821.17:2001MAR30 LG:1512507.1:2001MAR30	LG:196583.5:2001MAR30 LG:198669.1:2001MAR30 LG:202943.1:2001MAR30 LG:204724.3:2001MAR30	LG:206425.10:2001MAR30 LG:208190.2:2001MAR30 LG:222927.2:2001MAR30 LG:228046.5:2001MAR30 LG:230980.1:2001MAR30 LG:236976.2:2001MAR30 LG:238322.6:2001MAR30	LG:341461.1:2001MAR30 LG:354088.1:2001MAR30 LG:376275.1:2001MAR30 LG:399281.3:2001MAR30 LG:444677.34:2001MAR30 LG:968691.1:2001MAR30
SEQ ID NO: 30 31 32 33 34 34	8 6 8 8 6 9	4 4 4 4	54 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5	8888888

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Annotation	unnamed protein product (Homo sapiens)	unnamed protein product (Homo sapiens)	ribosomal protein L5 (Rattus norvegicus)	predicted protein dJ257A7.2 (Homo sapiens)	hypothetical protein (Homo sapiens)	R30923_1 (Homo sapiens)	KIAA1502 protein (Homo sapiens)	uninamed protein product (Homo sapiens)	Unknown (protein for MGC:4400) (Homo sapiens)	succinate dehydrogenase complex, subunit A. flavoprotein (Fp) (Homo	acetyl-CoA carboxylase (Homo sapiens)	tetraspanin membrane protein CD63 (Mus musculus)	dJ351K20.1.1 (novel C3HC4 type Zinc finger (RING finger) protein (isoform	1)) (Homo sapiens)	hnmp a1 protein (Homo sapiens)	neurofibromin (Mus musculus)	ankyrin (Homo sapiens)	translation initiation factor 5A (Zea mays)	elongation factor Tu (Mus musculus)	T-cell early activation protein (Mus musculus)	Unknown (protein for MGC:20009) (Homo sapiens)	unnamed protein product (Homo sapiens)	Similar to tropomyosin 4 (Homo sapiens)	hypothetical protein (Macaca fascicularis)	DLX-1 (Mus musculus)	putative (Mus musculus)	unnamed profein product (Homo sapiens)	cardiac leiomodin (Mus musculus)	putative (Mus musculus)	put. RCK2 protein (AA 1-530) (Raffus raffus)	AT3g13580/K20M4_2 (Arabidopsis thaliana)
Probability Score	o	0	1.00E-165	5.00E-87	0	1.00E-120	0	0		1.00E-89	0	5.00E-57	0		1.00E-157		0	3.00E-89	0	0	0	1.00E-161	1.00E-105	0	1.00E-140	1.00E-72	0	1.00E-122	0	0	1.00E-111
		g10434090	g206734	g2827474	g5419859	g4106984	g7959265	g16549907	g13436440	g12655061	9452316	g5410605	g7159799		g296650	g309453	g178646	g2668738	g556301	g476725	g17391340	g16551429	g15929959	g13874450	g1477588	g12845866	g16508652	g12656196	g12861800	g57667	915810196
Template ID	LG:983862.1:2001MAR30	LG:984130.1:2001MAR30	LG:986291.1:2001MAR30	LG:045210.8:2001MAR30	LG:229284.39:2001MAR30	LG:337810.20:2001MAR30	LG:463420.1:2001MAR30	LG:1080918.1:2001MAR30	LG:1093747.15:2001MAR30	LG:1096896.47:2001MAR30	LG:1098931.39:2001MAR30	LG:1100823.1:2001MAR30	LG:1166387.1:2001MAR30		LG:1383036.49:2001MAR30	LG:1452353.14:2001MAR30	LG:1452435.15:2001MAR30	LG:1498774.1:2001MAR30	LG:197180.1:2001MAR30	LG:199489.1:2001MAR30	LG:201908.3:2001MAR30	LG:247245.26:2001MAR30	LG:256365.2:2001MAR30	LG:332923.4:2001MAR30	LG:335276.1:2001MAR30	LG:350272.2:2001MAR30	LG:350921.2:2001MAR30	LG:406568.1:2001MAR30	LG:411043.3:2001MAR30	LG:414376.20:2001MAR30	LG:457695.1:2001MAR30
SEQ ID NO:	69	8	6	62	જ	8	65	8	47	88	69	2	71		72	73	74	75	92	77	78	79	8	8)	82	83	8	82	86	87	88

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1	Annotation	putative (Mus musculus)	PACE4A (Mus musculus)	MRE11 (Rattus norvegicus)	putative (Mus musculus)	hypothetical protein (Macaca fascicularis)	putative (Mus musculus)	match: multiple proteins; match: Q08151 P28185 Q01111 Q43554; match:	Q08150 Q40195 P20340 Q39222; match: Q40368 P36412 P40393 Q40723;	match: CE01798 Q38923 Q40191 Q41022; match: Q39433 Q40177 Q40218	G08146; match: P10949 P11023 Q16948 Q20337; match: Q25389 P25228	P20336 P05713; match: P35276 G08147 P17609 P22128; match: Q15771	P36410 P35291; GTP-binding (Homo sapiens)	U88 (Human herpesvirus 6)	Rab-related GTP-binding protein RabJ (Homo sapiens)	unnamed protein product (Homo sapiens)	unnamed protein product (Homo sapiens)	BC331191_1 (Homo saplens)	hypothetical protein (Homo sapiens)	F23269_2 (Homo saplens)	KIAA0827 protein (Homo saplens)	BM-010 (Homo sapiens)	KIAA1203 protein (Homo sapiens)	WSB-1 isoform (Homo sapiens)	FLAMINGO 1 (Homo sapiens)	unnamed profein product (Homo sapiens)	HL01494p (Drosophila melanogaster)	HCOBP (Homo saplens)	S-100 protein (Rattus norvegicus)	Unknown (protein for IMAGE:2989556) (Homo sapiens)	Run- and FWE-domain containing protein Rabip4R (Homo sapiens)	PRO1107 (Homo saplens)
•	Probability Score	4.00E-36	0	0	1.00E-75	5.00E-09	1.00E-111	2.00E-19						2.00E-25	1.00E-158	1.00E-171	0	0	1.00E-88	1.00E-108	0	3.00E-60	0	1.00E-128	0	0	5.00E-45	0	6.00E-48	4.00E-41	1.00E-166	6.00E-34
	Gi Number	g12860912	g769701	g9651646	g12855841	g15021881	g12832288	g2276313						g854065	97271471	g14597533	g17128217	g5080758	g5262557	g3540177	g4240143	g7582292	g6330433	g5410334	g9828190	g16549477	g16768654	913182779	g57175	g12804565	g15625568	g11493516
	Template ID	LG:902390.2:2001MAR30	LG:903565.20:2001MAR30	LG:978182.4:2001MAR30	LG:986827.1:2001MAR30	LG:013792.1:2001MAR30	LG:018258.1:2001MAR30	LG:023126.3:2001MAR30						LG:023618.1:2001MAR30	LG:030999.1:2001MAR30	LG:103508.1:2001MAR30	LG:107976.15:2001MAR30	LG:1080096.1:2001MAR30	LG:1080275.1:2001MAR30	LG:1090358.10:2001MAR30	LG:1095833.9:2001MAR30	LG:1383121.25:2001MAR30	LG:1386609.2:2001MAR30	LG:1398465.1:2001MAR30	LG:1453417.10:2001MAR30	LG:147869.3:2001MAR30	LG:148485.5:2001MAR30	LG:1501818.12:2001MAR30	LG:1508275.1:2001MAR30	LG:1509771.1:2001MAR30	LG:1512998.13:2001MAR30	LG:198251.7:2001MAR30
	SEQ ID NO:	86	8	91	8	દ	76	95						%	44	86	8	001	101	102	103	104	105	92	107	108	901	011	11	112	113	114

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1	Annotation	unnamed protein product (Hom		hypothetical protein (Macaca fascicularis)	hypothetical protein (Homo sapiens)	Rod1 (Homo sapiens)	LIM protein prickle b (Xenopus laevis)	putative katanin (Arabidopsis thallana)	unnamed protein product (Homo sapiens)	tripartite motif protein TRIM4 isoform alpha (Homo sapiens)	RTN-xL (Homo sapiens)	Similar to SWI/SNF related, matrix associated, actin dependent regulator of	chromatin, subfamily d, member 2 (Mus musculus)	nucleolysin TIAR (Homo sapiens)	putative (Mus musculus)	dJ1121G12.1.2 (A novel protein containing a putative PHD finger domain,	isoform 2) (Homo saplens)	TAK1 binding protein (Homo saplens)	putative (Mus musculus)	MLL-AF4 der(11) fusion protein (Homo sapiens)	putative (Mus musculus)	SEZ6L (Homo saplens)	Ankhzn (Mus musculus)	groucho-related protein 4 (Mus musculus)	Similar to leucine-rich neuronal protein (Homo sapiens)	oracle 1 protein (Mus musculus)	LIM protein (Homo sapiens)	unnamed protein product (Homo sapiens)	KIAA1362 protein (Homo sapiens)	KIAA1268 protein (Homo sapiens)	KIAA1466 protein (Homo sapiens)	Diabio (Drosophila melanogaster)
	Probability Score	0	0	1.00E-166	1.00E-110	0	0	1.00E-52	0	0	0	0		1.00E-163	4.00E-67	1.00E-107		0	1.00E-162	0	1.00E-163	0	0	0	1.00E-124	0	0	6.00E-76	1.00E-118	0	2.00E-81	0
	GI Number F		0	99651089	g12052983	94514554	g16356673	g3128218	g16554016	g12407377	g11610575	g13543110		9189310	g12844788	g10241461		g1401126	g12832845	g347377	g12860837	g13603398	g2914017	g7239366	g13960126	g6969629	g1537017	g7020724	g7243105	g6331213	g7959193	g7243777
	Template ID	LG:198296.1:2001MAR30	LG:198876.13:2001MAR30	LG:200704.1:2001MAR30	LG:206593.3:2001MAR30	LG:223970.11:2001MAR30	LG:227500.5:2001MAR30	LG:227722.7:2001MAR30	LG:229105.1:2001MAR30	LG:233761.4:2001MAR30	LG:234326.67:2001MAR30	LG:236056.27:2001MAR30		LG:253889.31:2001MAR30	LG:270833.135:2001MAR30	LG:292613.7:2001MAR30		LG:331546.2:2001MAR30	LG:332027.6:2001MAR30	LG:336998.1:2001MAR30	LG:338010.8:2001MAR30	LG:344597.1:2001MAR30	LG:347361.2:2001MAR30	LG:349293.17:2001MAR30	LG:410595.19:2001MAR30	LG:411151.35:2001MAR30	LG:411334.8:2001MAR30	LG:458583.1:2001MAR30	LG:475378.1:2001MAR30	LG:481572.1:2001MAR30	LG:481704.1:2001MAR30	LG:898195.4:2001MAR30
	SEQ ID NO:	115	116	117	118	119	120	121	122	123	124	125		126	127	128		129	130	131	132	133	134	135	136	137	138	139	140	141	142	143

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Annotation KIAA1298 protein (Homo sapiens) putative (Mus musculus) unnamed protein product (Homo sapiens) leucine-rich giloma-Inactivated 1 protein precursor (Mus musculus)	paracellin-1 (Homo saplens) unnamed protein product (Homo saplens) SIRZalpha protein (Homo saplens) unnamed protein product (Homo saplens) unnamed protein product (Homo saplens) Unknown (protein for MGC:7100) (Mus musculus) hypothetical protein (Macaca fascicularis) RIKEN cDNA 0610043B10 gene (Homo saplens)	TIS (Mus musculus) Similar to hypothetical protein DKFZp434G2226 (Mus musculus) unnamed protein product (Homo sapiens) BC39498_1 (Homo sapiens) unnamed protein product (Homo sapiens) zinc finger protein EZNF (Homo sapiens) unnamed protein product (Homo sapiens) Unknown (protein for MGC:5621) (Homo sapiens) superoxide dismutase-4AP (Zea mays)	Similar to RiKEN cDNA 1500017E18 gene (Homo saplens) MRIP2 (Homo saplens) Unknown (protein for MGC:15400) (Homo saplens) unnamed protein product (Homo saplens) unnamed protein product (Homo saplens) Unknown (protein for IMAGE:3352566) (Homo saplens) unnamed protein for IMAGE:335266) (Homo saplens) beta-3-galactosylfransferase (Danio reflo) Unknown (protein for MGC:32065) (Homo saplens) zinc finger protein (Mus musculus)
Probability Score 0 2.00E-68 0 1.00E-136	1.00E-150 1.00E-136 0 0 0 1.00E-103 1.00E-133	0 6.00E-87 1.00E-169 1.00E-158 0 0 0 1.00E-60 2.00E-85	1.00E-165 1.00E-148 0 1.00E-114 1.00E-124 3.00E-29 1.00E-106 6.00E-56 0
GI Number g7242951 g12844142 g10432612 g9309467	g5410527 g16553391 g11596121 g9997097 g16553765 g14318590 g16041142	g1711238 g16359265 g16550592 g4235144 g16549180 g4164083 g16508614 g12654987	g13279311 g15866260 g14602654 g16552172 g10435738 g12652727 g16553223 g16973457 g16973457
Template ID LG:903785.1:2001MAR30 LG:977454.3:2001MAR30 LG:977724.12:2001MAR30 LG:978215.19:2001MAR30	LG:981795.1:2001MAR30 LG:982784.1:2001MAR30 LG:987322.4:2001MAR30 LG:006242.7:2001MAR30 LG:027320.7:2001MAR30 LG:147541.44:2001MAR30 LG:228319.2:2001MAR30 LG:238754.19:2001MAR30	LG:405751.12:2001MAR30 LI:011822.6:2001MAY17 LI:1012467.2:2001MAY17 LI:1169981.13:2001MAY17 LI:1171553.1:2001MAY17 LI:1183156.3:2001MAY17 LI:1188500.6:2001MAY17 LI:147333.12:2001MAY17	L:197388.10:2001MAY17 L:2049216.1:2001MAY17 L:2051624.2:2001MAY17 L:2121838.1:2001MAY17 L:2122954.8:2001MAY17 L:2198064.2:2001MAY17 L:2206583.1:2001MAY17 L:23663.6:2001MAY17 L:236563.2001MAY17 L:236563.2001MAY17
SEQ ID NO: 144 145 146 147	148 150 151 152 153 154 155 155 155 155 155 155 155 155 155	35	168 168 170 170 173 173

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	Unknown (protein for MGC::Zusuz) (Homo sapiens) PQBP-1b/c (Homo sapiens) lysosomal proteinase cathepsin B (Homo sapiens) ribosomal protein S7 (Secale cereale) unnamed protein product (Homo sapiens) putative (Mus musculus) brain link protein-1 (Mus musculus) unknown (Homo sapiens)	R31155_1 (Homo saplens) Purkinje cell protein 2; Pcp-2 (Mus sp.) unnamed protein product (Homo saplens) hypothetical protein PRO1741 (Homo saplens) gliutamate rich WD repeat protein (Homo saplens) Unknown (protein for MGC:14981) (Homo saplens) F23269_2 (Homo saplens) KIAA1473 protein (Homo saplens)	gonadotropin inducible transcription repressor-2 (Homo sapiens) autoimmune enteropathy-related antigen AIE-75 (Homo sapiens) Ais2 (Mus musculus) Unknown gene product (Homo sapiens) unnamed protein product (Homo sapiens) Similar to KIAA0961 protein (Homo sapiens) unnamed protein product (Homo sapiens) autorial protein product (Homo sapiens) ribosomal protein (Macaca fascicularis)
Probability Score 1.00E-115 0 0 1.00E-143	3.00E-71 1.00E-109 2.00E-61 1.00E-96 4.00E-99 0	3.00E-59 7.00E-33 0 1.00E-169 0 0 1.00E-126	0 0 4.00E-79 0 3.00E-39 1.00E-108 0 1.00E-121 1.00E-116 2.00E-38
GI Number g9971114 g13517077 g15209690 g168647 g13160045	g1/5/2041 g10801585 g181178 g4588906 g16553223 g12841311 g11094295	g6249687 g232783 g14042915 g13279044 g13274611 g14602971 g3540177	g6467202 g5231271 g15823640 g3417297 g16550359 g13937909 g16549529 g3256185 g13676443
Template ID L:256059.46:2001MAY17 L:279978.22:2001MAY17 L:311541.6:2001MAY17 L:346123.1:2001MAY17 L:381211.5:2001MAY17	U:412197.82:2001MAY17 U:412936.49:2001MAY17 U:450229.1:2001MAY17 U:4565.243:2001MAY17 U:764701.8:2001MAY17 U:024124.2:2001MAY17 U:038252.3:2001MAY17	LI:056882.1:2001MAY17 LI:059530.1:2001MAY17 LI:089950.30:2001MAY17 LI:1072906.38:2001MAY17 LI:1158936.4:2001MAY17 LI:117412.15:2001MAY17 LI:1174279.14:2001MAY17	LI:1175131.1:2001MAY17 LI:1188801.10:2001MAY17 LI:197739.4:2001MAY17 LI:2049016.1:2001MAY17 LI:2049137.1:2001MAY17 LI:2051907.1:2001MAY17 LI:217996.13:2001MAY17 LI:21178983.15:2001MAY17 LI:2120312.1:2001MAY17
SEQ ID NO: 175 176 177 178 179	181 182 183 184 185 186	88 89 89 89 89 89 89 89 89 89 89 89 89 8	202 203 204 205 205 207 204 204 205

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Anothorhous	bA255A11.3 (novel protein similar to KIAA1074) (Homo sapiens)	unnamed protein product (Homo sapiens)	KIAA1890 protein (Homo sapiens)	UBX domain-containing protein 1 (Homo sapiens)	unnamed protein product (Homo sapiens)	pol protein (Human endogenous retrovirus K)	D-E-A-D box protein (Drosophila melanogaster)	bA526D8.2 (novel protein similar to KIAA1074) (Homo sapiens)	putative (Mus musculus)	CpG binding protein (Homo sapiens)	NUANCE (Homo saplens)	KIAA0356 protein (Homo saplens)	alpha-adaptin A related protein (Homo sapiens)	unnamed protein product (Homo saplens)	Unknown (protein for IMAGE:4561365) (Homo saplens)	putative (Mus musculus)	R27945_1 (Homo sapiens)	ubiquitin-conjugating enzyme, UBC9 (Homo sapiens)	kelch-like protein KLHL6 (Homo sapiens)	bG153O3.1 (similar to C.elegans hemicentin precursor) (Homo sapiens)	unnamed protein product (Homo sapiens)	GM (Homo sapiens)	KIAA1285 protein (Homo sapiens)	TNFAIP1-like protein (Homo sapiens)	Similar to ATPase, H+ transporting, lysosomal (vacuolar proton pump) 42kD	(Mus musculus)	protein B (Homo sapiens)	unnamed protein product (Homo saplens)	Unknown (protein for MGC:15677) (Homo sapiens)	CG7616 gene product (Drosophila melanogaster)	proline-rich acidic protein (Homo saplens)	
Probability Score	8.00E-74	0	9.00E-95	0	4.00E-41	1.00E-73	1.00E-84	1.00E-150	1.00E-166	1.00E-104	3.00E-67	0	1.00E-103		0	3.00E-55	0	1.00E-42	1.00E-174	0	1.00E-119	3.00E-40	0	1.00E-147	1.00E-161		0	4.00E-74	2.00E-95	9.00E-99	4.00E-51	
N. inber	g12314195	g16550359	g15620839	g13160494	g16549907	g4185943	g499204	g12314164	g12842288	g7188556	g17016967	g6634023	g15963476	g14042035	g15555519	g12840887	g2689446	g2597931	g17105197	g11544425	g7019945	g402827	g6331377	g15072406	g13277864		g1208742	g16549383	g14043223	g7294748	g16265875	
Clethand	U:2121328.17:2001MAY17	LI:2121802.5:2001MAY17	LI:2123406.9:2001MAY17	U:216129.45:2001MAY17	LI:2186630.1:2001MAY17	U:2188206.2:2001MAY17	L:2199710.9:2001MAY17	LI:2209335.2:2001MAY17	U:230980.13:2001MAY17	U:244421.37:2001MAY17	LI:341998.1:2001MAY17	LI:347931.10:2001MAY17	U:350771.42:2001MAY17	LI:354423.6:2001MAY17	LI:399333.8:2001MAY17	U:445084.36:2001MAY17	L:454087.3:2001MAY17	LI:474887.1:2001MAY17	LI:745251.1:2001MAY17	LI:747717.9:2001MAY17	LI:806211.3:2001MAY17	LI:815072.1:2001MAY17	LI:817052.8:2001MAY17	LI:903392.45:2001MAY17	L:013724.1:2001MAY17		LI:191726.16:2001MAY17	LI:202270.2:2001MAY17	LI:2119352.6:2001MAY17	LI:2207776.11:2001MAY17	LI:256442.1:2001MAY17	
010	206	207	208	506	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230		231	232	233	234	235	

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SEQ ID NO:	Template ID	GI Number Pr	Probability Score	Annotation Annotation
237	U:018494.1:2001MAY17	g17389275	0	Unknown (protein for MGC:19357) (Mus musculus)
238	L:023518.2:2001MAY17	93955100	4.00E-75	vacuolar adenosine triphosphatase subunit D (Mus musculus)
239	LI:053488.46:2001MAY17	g3712671	1.00E-136	vascular endothelial growth factor (Homo sapiens)
240	U:058298.27:2001MAY17	g17045994	1.00E-100	unnamed protein product (Homo sapiens)
241	LI:1110046.1:2001MAY17	g1854374	1.00E-172	aquaporin 3 (Homo sapiens)
242	U:1166752.11:2001MAY17	g15929737	1.00E-131	Similar to zinc finger protein 347 (Mus musculus)
243	U:1173766.1:2001MAY17	g7239109	0	HSPC059 (Homo saplens)
244	LI1177952.4:2001MAY17	g14042590	1.00E-116	unnamed protein product (Homo sapiens)
245	U:1178064.3:2001MAY17	g5262591	0	hypothetical protein (Homo saplens)
246	LI:1183121.1:2001MAY17	g15489325	1.00E-163	Similar to hypothetical protein MGC10520 (Homo saplens)
247	LI:1190431.13:2001MAY17	g451303	0	complement receptor 1 (Homo sapiens)
248	LI:199121.14:2001MAY17	g15593660	0	unnamed protein product (synthetic construct)
249	LI:202630.5:2001MAY17	g14134965	0	unnamed protein product (Homo sapiens)
250	LI:2034488.1:2001MAY17	g15277259	1.00E-156	zinc finger protein homologous to mouse Zfp91 (Homo sapiens)
251	LI:2051434.8:2001MAY17	g]3436]64	1.00E-151	carbonic anhydrase III, muscle specific (Homo sapiens)
252	LI:2118475.9:2001MAY17	g37605	0	urokinase plasminogen activator receptor (Homo sapiens)
253	LI:218849.24:2001MAY17	g4240249	0	KIAA0880 protein (Homo sapiens)
254	U:2199824.5:2001MAY17	g15929959	1.00E-105	Similar to tropomyosin 4 (Homo sapiens)
255	LI:233018.32:2001MAY17	g15928921	0	hypothetical protein FLJ14393 (Homo sapiens)
256	LI:236295.8:2001MAY17	g33967	1.00E-124	interferon regulatory factor-2 (AA 1-349) (Homo sapiens)
257	LI:286989.14:2001MAY17	g2967646	0	Smad2 (Homo sapiens)
258	LI:345320.4:2001MAY17	g2330595	oʻ	ikaros transcription factor (Gallus gallus)
259	U:355693.18:2001MAY17	g961515	0	plexin (Xenopus Iaevis)
260	LI:359876.1:2001MAY17	g15293713	1.00E-123	olfactory receptor (Homo sapiens)
261	LI:406664.32:2001MAY17	g432656	0	serum response factor-related protein (Homo sapiens)
262	LI:410324.1:2001MAY17	g14009459	0	protocadherin-beta 1 (Homo sapiens)
263	LI:414376.12:2001MAY17	g199893	0	murine potassium channel protein (Mus musculus)
264	LI:452089.1:2001MAY17	g7340874	4.00E-96	ESTs D15590(C0900), D48950(S15542), D22684(C0900) correspond to a region
			. •	of the predicted gene.~Similar to Arabidopsis thallana 60S ribosomal
				profein Li i A (LioA), (P42/95) (Oryza sativa)

Annotation	calcium/calmodulin-dependent protein kinase kinase b2 (Homo sapiens)	zinc finger protein (Homo sapiens)	N-methyl-D-aspartate receptor NMDAR1-2b subunit (Rattus norvegicus)	translation initiation factor 5A (Zea mays)	unnamed protein product (Homo sapiens)	Similar to RIKEN cDNA 2310035M22 gene (Mus musculus)	alpha 1 A-voltage-dependent calcium channel (Homo sapiens)	putative (Mus musculus)	unnamed protein product (Homo sapiens)	Unknown (protein for IMAGE:3877337) (Homo sapiens)	KIAA1479 protein (Homo sapiens)	hypothetical protein (Macaca fascicularis)	hypothetical protein (Homo sapiens)	unnamed protein product (Homo sapiens)	KIAA1473 protein (Homo sapiens)	Unknown (protein for MGC:15514) (Homo sapiens)	unnamed protein product (Homo sapiens)	CSMD1 (Mus musculus)	unnamed protein product (Homo sapiens)	protein inhibitor of activated STAT protein PIASx-beta (Homo sapiens)	putative (Mus musculus)	hypothetical protein (Macaca fascicularis)	unnamed protein product (Homo saplens)	tousled-like kinase 1 (Homo sapiens)	putative acetyltransferase (Homo sapiens)	putative (Mus musculus)	bA338L11.1 (novel CUB domain protein similar to attractin) (Homo sapiens)	olfactory receptor (Mus musculus)	putative (Mus musculus)	C-terminal binding protein 2 CtBP2 (Mus musculus)	dJ29K1.2 (KIAA0426 (C2H2 type zinc finger protein)) (Homo sapiens)
Probability Score	0	0	0	3.00E-89		1.00E-119	1.00E-110	4.00E-64	1.00E-158	Ó	0		0	·. O	2.00E-60	7.00E-91	0	0	0	0	0	2.00E-96	0	0	0	0	0	1.00E-113	1.00E-169	1.00E-164	0
GI Number P	g14522878	g4096339	g475560	g2668738	g12405805	g13879442	g1763638	g12837586	g14042544	g16307285	g14133251	g13676461	g5262574	g17049366	g7959207	g13938261	g7020611	g14787176	g16549477	g3643115	g12853497	g13358646	g16551759	g6063017	g13195460	g12856025	g10800564	g8919698	g12846015	g3513571	g15020827
Template ID	L:481614.43:2001MAY17	L:809605.2:2001MAY17	L:816437.25:2001MAY17	L:817827.5:2001MAY17	LI:002345.15:2001MAY17	LI:022629.5:2001MAY17	L:061031.4:2001MAY17	LI:108232.2:2001MAY17	L:1085493.16:2001MAY17	LI:1085513.2:2001MAY17	LI:1086797.9:2001MAY17	LI:1088446.1:2001MAY17	LI:1133764.3:2001MAY17	LI:1147614.5:2001MAY17	LI:1181710.1:2001MAY17	LI:1183192.1:2001MAY17	LI:1188786.15:2001MAY17	U:145626.1:2001MAY17	L:147869.3:2001MAY17	U:151747.4:2001MAY17	U:198296.1:2001MAY17	LI:200117.4:2001MAY17	LI:200704.1:2001MAY17	LI:2049995.3:2001MAY17	U:2052097.2:2001MAY17	LI:209351.22:2001MAY17	LI:2120481.1:2001MAY17	LI:2121610.13:2001MAY17	LI:2191585.1:2001MAY17	U:2198562.3:2001MAY17	LI:2209684.5:2001MAY17
SEQ ID NO:	265	566	267	268	569	270	172	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295

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Annotation Unknown (protein for IMAGE:4121355) (Homo saplens) dJ138B7.3.2 (lethal (3) malignant brain tumor (1(3)mbt) protein (Drosophila)	protein kinase C-binding protein RACK7 (Homo sapiens) KIAA1311 protein (Homo sapiens)	unnamed protein product (Homo sapiens) Fas-associated factor, FAF1 (Homo sapiens)	p54 (c-ets) protein (AA 1-441) (Gallus gallus)	GIP-binding protein SAR1 (Homo sapiens) KIAA1538 protein (Homo sapiens)	unnamed protein product (Homo sapiens)	cap-binding protein (Homo sapiens)	hypothetical protein, similar to (AF134804) putative zinc finger transcription	factor OVO1.(Mus musculus) (Homo sapiens)	MTG8-related protein MTG16b (Homo sapiens)	hypothetical protein (Homo sapiens)	ATP-binding cassette A9 (Homo saplens)	s musculus)	KIAA0379 protein (Homo sapiens)	franslation initiation factor eIF2C (Oryctolagus cuniculus)	hypothetical protein (Homo sapiens)	hypothetical protein (Mus musculus)	(Mus musculus)	insulin receptor substrate protein of 53 kDa (a shorter form) (Homo sapiens)	Unknown (protein for IMAGE:3352566) (Homo sapiens)	(aplens)	liens)	KIAA1362 protein (Homo sapiens)	env protein (Human endogenous retrovirus K)	unnamed protein product (Homo sapiens)	ILS-associated serine-arginine protein 2 (Homo sapiens)
	protein kinase C KIAA1311 proteir	unnamed protel Fas-associated for	p54 (c-ets) prote	GIP-binding prof KIAA1538 proteir	unnamed protei	cap-binding pro	hypothetical pro	factor OVO1.(M	MTG8-related pr	hypothetical pro	ATP-binding cas	Jedi protein (Mus musculus)	KIAA0379 proteir	translation initiat	hypothetical pro	hypothetical pro	oracle 2 protein (Mus musculus)	insulin receptor s	Unknown (protei	TESTIN 2 (Homo saplens)	MAIL (Homo sapiens)	KIAA1362 proteir	env protein (Hun	unnamed protei	TLS-associated se
Probability Score 0	00	0 1.00E-110	7.00E-57	1.00E-14 1.00E-161	1.00E-141	1.00E-129	9.00E-98		0	Ģ	0	0	Ó	0	0	0	0	0	3.00E-43	1.00E-116	0	1.00E-118	0	0	2.00E-63
GI Number 1 g14602998 g11323324	g3142288 g7242977	g7019901 g6729590	g63180	g10445221 g7959343	g10434090	g306487	g5102580		g3256266	g2664429	g17223624	g17386053	g6634025	93253159	g6807862	g8885518	g6969631	g4239984	g12652727	g10443902	g13516831	g7243105	g4185940	g16550160	g13477159
Template ID U:222795.28:2001MAY17 U:228273.25:2001MAY17	LI:232386.31:2001MAY17 LI:233089.2:2001MAY17	U:240641.10:2001MAY17 U:243871.4:2001MAY17	U:245597.7:2001MAY17	LI:25009.31:2001MAY17 LI:262221.1:2001MAY17	LI:332957.8:2001MAY17	LI:335352.13:2001MAY17	LI:343844.7:2001MAY17		LI:344528.1:2001MAY17	LI:374578.27:2001MAY17	LI:381993.13:2001MAY17	LI:400373.2:2001MAY17	LI:400963.6:2001MAY17	LI:404874.8:2001MAY17	LI:405158.18:2001MAY17	U:405889.22:2001MAY17	U:411151.31:2001MAY17	LI:411313.51:2001MAY17	LI:417127.1:2001MAY17	LI:429817.44:2001MAY17	LI:474134.23:2001MAY17	LI:475378.3:2001MAY17	LI:749588.15:2001MAY17	LI:757736.17:2001MAY17	U:817278.4:2001MAY17
SEQ ID NO: 296 297	298 299	900 900 1000	302	<u> </u>	305	306	307		308	306	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324

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		S. M. M. J.	Probability Score	Appopulation
	•			
325	LI:02/320.5:2001MAY1/		>	
326	LI:204635.5:2001MAY17	g13311008	2.00E-11	Homo sapiens NYD-SP16 mRNA, complete cds.
327	LI:215532.38:2001MAY17	g12803351	0	Unknown (protein for IMAGE:3050476) (Homo sapiens)
328	LI:228319.6:2001MAY17	g16041142	1.00E-133	hypothetical protein (Macaca fascicularls)
329	LI:236589.24:2001MAY17	g17064170	0	HSV-1 stimulating-related protein (Homo sapiens)
330	LI:247444.3:2001MAY17	g13435476	1.00E-133	Unknown (protein for MGC:6708) (Mus musculus)
331	LI:332404.20:2001MAY17	g14388334	0	hypothetical protein (Macaca fascicularis)
332	LG:1088459.4:2001JUN22	g2306773	2.00E-21	zinc finger protein (Homo saplens)
333	LG:1501495.1:2001JUN22	938032	0	ZNF43 (Homo sapiens)
334	LG:334284.10:2001JUN22	g12855389	2.00E-41	putative (Mus musculus)
335	LG:345279.19:2001JUN22	g1199602	1.00E-115	cyclophilin-like protein (Homo sapiens)
336	LG:7689681.1:2001JUN22	g17511871	9.00E-96	Unknown (protein for MGC:32104) (Homo sapiens)
337	LG:7690093.1:2001JUN22	938032	0	ZNF43 (Homo sapiens)
338	LG:7690175.3:2001JUN22	g12052983	1.00E-115	hypothetical protein (Homo saplens)
339	LG:7697128.1:2001JUN22	g17511825	1.00E-70	Similar to immunoglobulin kappa constant (Homo saplens)
340	LG:006394.20:2001JUN22	g6808105	3.00E-79	hypothetical protein (Homo sapiens)
341	LG:1012069.1:2001JUN22	g15451412	1.00E-105	hypothetical protein (Macaca fascicularis)
342	LG:104533.11:2001JUN22	g5050962	2.00E-29	dJ34B21.5 (PUTATIVE novel protein with ZU5 domain similar to part of Tight
				Junction Protein ZO1 (TJP1) and UNC5 Homologs) (Homo sapiens)
343	LG:1045853.23:2001JUN22	g7297900	1.00E-132	CG6734 gene product (Drosophila melanogaster)
344	LG:1081017.8:2001JUN22	g7768736	1.00E-13	putative gene, ankirin like, possible dual specifity Ser/Thr/Tyr kinase domain
				(Homo sapiens)
345	LG:1090358.6:2001JUN22	g5080758	3.00E-16	BC331191_1 (Homo saplens)
346	LG:1135312.7:2001JUN22	g14279194	0	aldo-keto reductase loopADR (Homo sapiens)
347	LG:1328501.2:2001JUN22	g16551783	1.00E-115	unnamed protein product (Homo sapiens)
348	LG:133095.1:2001JUN22	g16877077	0	Unknown (protein for MGC:24494) (Homo sapiens)
349	LG:135379.5:2001JUN22	g16552010	0	unnamed protein product (Homo sapiens)
320	LG:1365581.3:2001JUN22	g347906	8.00E-17	zinc finger protein (Homo sapiens)
351	LG:1383156.20:2001JUN22	g387030	1.00E-104	pulmonary surfactant protein SP-C1 (Homo sapiens)
352	LG:1501767.18:2001JUN22	g11611571	1.00E-115	hypothetical protein (Macaca fascicularis)
353	LG:1501890.8:2001JUN22	g7021971	0	unnamed protein product (Homo sapiens)

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Annotation	put. keratin K7 (Homo saplens)	transformation-associated protein (Human adenovirus type 2)	phosphoinositol 3-phosphate binding protein-1 (Homo sapiens)	KIAA1140 protein (Homo sapiens)	unnamed protein product (Homo sapiens)	CRP2 (cysteine-rich protein 2) (Rattus norvegicus)	hypothetical protein (Homo saplens)	kelch-like protein KLHL6 (Homo sapiens)	Unknown (protein for IMAGE:4561365) (Homo sapiens)	ribosomal protein L5 (Rattus norvegicus)	KIAA0638 protein (Homo sapiens)	bA255A11.3 (novel protein similar to KIAA1074) (Homo sapiens)	KIAA1502 protein (Homo sapiens)	unnamed protein product (Homo sapiens)	transmembrane 4 superfamily member 7 (Homo saplens)	hUPF3B (Homo saplens)	putative (Mus musculus)	thymopoletin gamma (Homo sapiens)	putative (Mus muscuius)	alpha-2-macroglobulin receptor (Gallus gallus)	unnamed protein product (Homo sapiens)	KIAA1010 protein (Homo sapiens)	formin binding protein 30 (Mus musculus)	unnamed protein product (Homo sapiens)	Similar to spleen tyrosine kinase (Homo sapiens)	MAIL (Homo sapiens)	TNFAIP1-like protein (Homo sapiens)	Ser/Thr protein kinase PAR-1Balpha (Homo sapiens)	unnamed protein product (Homo sapiens)	unnamed protein product (Homo sapiens)	I(3)mbt protein homolog (Homo sapiens)
Probability Score	1.00E-65	0	0	0	1.00E-27	1.00E-130	1.00E-176	1.00E-120	0	1.00E-173	1.00E-118	1.00E-120	0	0	1,00E-41	1.00E-162	1.00E-60	0	0	2.00E-22	1.00E-136	0	0	0	0	3.00E-26	1.00E-102	0	0	0	0
GI Number	g4902831	g209820	g9992893	g6329945	g16550444	g487284	g12052983	g17105197	g15559519	g206734	g3327090	g12314195	g7959265	g15862442	g12653241	g12232324	g12856090	g508729	g12861800	g438007	g16553391	g4589670	g7307264	g16553765	g12804209	g13516831	g15072406	g15042611	g10437204	g16551917	g3811111
Template ID	LG:203434.23:2001JUN22	LG:204724.5:2001JUN22	LG:257107.16:2001JUN22	LG:353530.4:2001JUN22	LG:7683573.3:2001JUN22	LG:7684224.1:2001JUN22	LG:7690365.2:2001JUN22	LG:968691.1:2001JUN22	LG:983076.7:2001JUN22	LG:986291.1:2001JUN22	LG:990347.41:2001JUN22	LG:998305.4:2001JUN22	LG:463420.16:2001JUN22	LG:979059.3:2001JUN22	LG:1045509.22:2001JUN22	LG:246935.4:2001JUN22	LG:321069.2:2001JUN22	LG:346724.14:2001JUN22	LG:411043.3:2001JUN22	LG:978620.7:2001JUN22	LG:982784.1:2001JUN22	LG:007574.21:2001JUN22	LG:013856.18:2001JUN22	LG:027320.7:2001JUN22	LG:077967.9:2001JUN22	LG:128475.9:2001JUN22	LG:1398104.15:2001JUN22	LG:1454018,10:2001JUN22	LG:221548.14:2001JUN22	LG:227500.5:2001JUN22	LG:228273.22:2001JUN22
SEQ ID NO:	354	355	356	357	358	359	360	361	362	363	364	365	366	367		369	370			373	374	375	376	377	378	379	380	381	382	383	384

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SEQ ID NO:	Template ID	GI Number	GI Number Probability Score	Annotation
385	LG:235432.1:2001JUN22	g12655229	0	glucocorticoid modulatory element binding protein 1 (Homo sapiens)
386	LG:236904.20:2001JUN22	6601699B	0	SWAP-70 (Homo sapiens)
387	LG:253193.21:2001JUN22	g7578783	4.00E-44	HT015 protein (Homo sapiens)
388	LG:332161.3:2001JUN22	g16555334	1.00E-109	Rig protein (Homo sapiens)
386	LG:332923.5:2001JUN22	g14388339	0	hypothetical protein (Macaca fascicularis)
390	LG:343500.27:2001JUN22	g12854500	3.00E-88	putative (Mus musculus)
391	LG:369703.9:2001JUN22	916741627	0	Similar to RIKEN cDNA 3830421M04 gene (Homo sapiens)
392	LG:415378.3:2001JUN22	g11320820	0	VSGP/F-spandin (Homo saplens)
393	LG:458583.1:2001JUN22	g7020724	9.00E-76	unnamed protein product (Homo sapiens)
394	LG:7690373.1:2001JUN22	g7959207	2.00E-60	KIAA1473 protein (Homo saplens)
395	LG:898324.13:2001JUN22	g16551459	1.00E-100	unnamed protein product (Homo sapiens)
396	LG:979167.5:2001JUN22	a15788437	1.00E-131	cyclin-box carrylng protein (Homo sapiens)

E-value 4.90E-51 2.10E-25 7.50E-61 4.10E-07 3.80E-08 1.20E-21	9.00E-113 2.30E-05 4.00E-23 1.80E-24 7.20E-11 4.00E-23 2.00E-07 4.90E-07 2.10E-87 3.20E-19 1.20E-04 1.90E-42 9.40E-19 7.20E-06 2.30E-40 1.30E-12 3.50E-10 6.10E-26 2.60E-59 3.30E-25 1.80E-06	4.10E-68 2.10E-08 1.10E-07 3.90E-17
Pfam Description Acyl-CoA dehydrogenase, C-terminal domain KRAB box SCAN domain Zinc finger, C2H2 type Zinc finger, C2H2 type Zinc finger, C2H2 type Ribosomal protein L7Ae/L30e/S12e/Gadd45	Ferritin Zinc finger, C2H2 type KRAB box Thymosin beta-4 family A20-like zinc finger KRAB box Zinc finger, C2H2 type Apoptosis regulator proteins, Bct-2 family Lectin C-type domain Zinc finger, C2H2 type Apoptosis regulator protein Zinc finger, C2H2 type Apoptosis regulator protein Zinc finger, C2H2 type Apoptosis capulator protein SCP-like extracellular protein C-type lysozyme/alpha-lactalbumin family Protein kinase domain PX domain Ribosomal L5P family C-terminus KRAB box Zinc finger, C2H2 type	Ribosomal protein L22p/L17e MORN repeat Low-density lipoprotein receptor repeat class B CUB domain
Pfam Hit Acyl-CoA_dh KRAB SCAN zf-C2H2 zf-C2H2 Ribosomal_L7Ae	ferritin zf-C2H2 KRAB Tf-A20 KRAB zf-C2H2 zf-C2H2 zf-C2H2 Zf-C2H2 Bcl-2 lectin_c SCP lys pkinase PX Ribosomal_L5 Ribosomal_L5 Ribosomal_L5 KRAB zf-C2H2	Ribosomal_L22 MORN Idl_recept_b CUB
Frame forward 2 forward 3 forward 1 forward 3 forward 1	forward 3 forward 3 forward 1 forward 1 forward 1 forward 2 forward 1 forward 2	
Stop 2119 367 584 984 929 531	555 527 527 189 132 514 503 503 888 888 503 515 515 515 503 400 860 789 503 889 503 880 880 880 880 880 880 880 880 880 8	486 581 1470 1928
Start 1664 245 297 916 861 283	185 405 405 405 405 405 130 861 130 862 820 820 820 820 820 820 820 820 820 82	79 513 1342 1599
Template ID LG:036272.1:2001MAR30 LG:093337.3:2001MAR30 LG:1049927.6:2001MAR30 LG:1051891.34:2001MAR30 LG:1089626.1:2001MAR30 LG:1101416.6:2001MAR30	LG:1295974.1:2001MAR30 LG:1406572.2:2001MAR30 LG:1446621.1:2001MAR30 LG:1503044.7:2001MAR30 LG:1503588.1:2001MAR30 LG:1503589.2:2001MAR30 LG:1503589.2:2001MAR30 LG:1503589.2:2001MAR30 LG:220648.6:2001MAR30 LG:236654.1:2001MAR30 LG:237699.26:2001MAR30 LG:31541.16:2001MAR30 LG:335923.7:2001MAR30 LG:350342.14:2001MAR30 LG:369301.32:2001MAR30 LG:369301.32:2001MAR30 LG:369301.32:2001MAR30 LG:369301.32:2001MAR30 LG:452089.1:2001MAR30	LG:466302.1:2001MAR30 LG:474267.1:2001MAR30 LG:995613.10:2001MAR30 LG:011843.5:2001MAR30
SEQ ID NO: 1 2 3 3 4 4 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	~ в ° Б Г Б Б Б Б Б Б Б Б Б Б Б Б Б Б Б Б Б	24 25 27

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E-value 2.30E-05 4.60E-09 5.20E-14 2.60E-06 3.50E-08 1.80E-22 2.30E-06	0.20E-06 1.20E-24 2.50E-06 2.70E-33 2.30E-04 2.90E-07 1.10E-07 1.0E-07	3.80E-08 3.80E-08 1.40E-16 1.60E-05 3.80E-18 2.80E-95 4.80E-260 5.40E-189	2.30E-115 4.50E-24 4.80E-07 9.70E-27 9.10E-05 4.50E-10 5.50E-23
Pfam Description EGF-like domain Ras association (RaIGDS/AF-6) domain Sushi domain (SCR repeat) RhoGAP domain Ankyrin repeat KRAB box Zinc finger, C2H2 type	KRAB box Zinc finger, C2H2 type RhoGEF domain Glycosyl transferase family 8 WD domain, G-beta repeat Ribosomal L10 Protein kinase domain Helix-ti rn-helix	Thrombospondin type 1 domain 'chromo' (CHRromatin Organization MOdifier) domain EGF-like domain Sushi domain (SCR repeat) Adenovirus E18 19K protein / small t-antigen Adenovirus E81 55K protein / large t-antigen Guanylate-binding protein, N-teminal domain	Guanylate-binding protein, C-terminal domain KRAB box Zinc finger, C2H2 type Fork head domain Zinc finger, C2H2 type Ankyrin repeat Homeobox domain Sema domain
Pfam Hit EGF RA sushi RhoGAP ank KRAB zf-C2H2	GINK KRAB zf-C2H2 RhoGEF Glyco_transf_8 WD40 Ribosomal_L10e pkinase	tsp_1 chromo EGF sushi Adeno_E1B_19K Adeno_E1B_55K GBP	GBP_C KRAB zf-C2H2 Fork_head zf-C2H2 ank homeobox Semo
Frame forward 3 forward 1 forward 3 forward 3 forward 3 forward 3			
Stop 410 1601 804 335 1919 437 1187	255 257 257 250 360 360 889 889 889	757 187 187 339 1587 1762 1762	2178 303 1110 702 914 309 506 1519
Start 303 1263 637 3 3 3 3 3 15 1119 385	207 707 707 139 139 105 105 105 105 105 105 105 105 105 105	602 602 603 603 603 603 611 611	1303 181 1042 418 846 211 336 536
Template ID LG:011843.5:2001MAR30 LG:075904.32:2001MAR30 LG:1004781.3:2001MAR30 LG:104448.2:2001MAR30 LG:1080598.9:2001MAR30 LG:1080598.9:2001MAR30	LG: 108120.2:2001MAR30 LG: 1083120.2:2001MAR30 LG: 1087492.12:2001MAR30 LG: 1227408.25:2001MAR30 LG: 1326953.1:2001MAR30 LG: 137821.17:2001MAR30 LG: 1397821.17:2001MAR30	LG:196583.5:2001MAR30 LG:198669.1:2001MAR30 LG:202943.1:2001MAR30 LG:204724.3:2001MAR30 LG:204724.3:2001MAR30 LG:204724.3:2001MAR30 LG:206425.10:2001MAR30	LG:206425.10:2001MAR30 LG:208190.2:2001MAR30 LG:222927.2:2001MAR30 LG:228046.5:2001MAR30 LG:230980.1:2001MAR30 LG:236976.2:2001MAR30 LG:238322.6:2001MAR30
SEQ ID NO: 27 28 29 30 31 32 32	8 8 8 8 8 8 8 8	3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	\$4 \$4 \$4 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6 \$6

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	Pfam Description	Sema domain	DnaJ domain	Integrase core domain	KRAB box	Ankyrin repeat	Ankyrin repeat	Ankyrin repeat	Vacuolar sorting protein 9 (VPS9) domain	Fumarylacetoacetate (FAA) hydrolase family	BTB/POZ domain	P21-Rho-binding domain	Protein kinase domain	BTB/POZ domain	Kelch motif	Ribosomal L18p/L5e family	RPEL repeat	Tubulin-tyrosine ligase family	Armadillo/beta-catenin-like repeat	Glycosyltransferase family 25 (LPS blosynthesis	protein)	Zinc finger, C2H2 type	KRAB box	Zinc finger, C2H2 type	Fumarate reductase/succinate	dehydrogenase flavoprotein C-terminal	Biotin carboxylase C-terminal domain	Blotin carboxylase C-terminal domain
TABLE 3	Pfam Hit	Sema	Dua	FVB .	KRAB	ank	ank	ank	VPS9	FAA_hydrolase	BTB	PBD	pkinase	BTB .	Kelch	Ribosomal_L18p	RPEL	Ę	Armadillo_seg	Glyco_transf_25		zf-C2H2	KRAB	zf-C2H2	succ_DH_flav_C		Biotin_carb_C	Biotin_carb_C
,	Stop Frame	1668 forward 1	485 forward 3	587 forward 3	31 forward 1	752 forward 3	1716 forward 1	2653 forward 2	1231 forward 2	817 forward 2	31 forward 1	399 forward 1	2166 forward 1	625 forward 2	1348 forward 2	570 forward 1	192 forward 1	2792 forward 3	355 forward 2	2995 forward 2		1071 forward 1	662 forward 3	1181 forward 3	601 forward 2		1902 forward 1	1864 forward 2
	Start Sto	706 16	288 48		709 831	654 73	1618 17	2555 26	917 12			226 39	1411 21	302 65	1196 13	127 57	115 19	1914 27	227 38	2441 29		5001	540	1113 11	185 60		1615 19	1694 18
	Template ID	LG:238322.6:2001MAR30	LG:341461.1:2001MAR30	LG:354088.1:2001MAR30	LG:376275.1:2001MAR30	LG:399281.3:2001MAR30	LG:399281.3:2001MAR30	LG:404921.10:2001MAR30 ;	LG:404921.10:2001MAR30	LG:444677.34:2001MAR30	LG:968691.1:2001MAR30	LG:983862.1:2001MAR30	LG:983862.1:2001MAR30	LG:984130.1:2001MAR30	LG:984130.1:2001MAR30	LG:986291.1:2001MAR30	LG:045210.8:2001MAR30	LG:229284.39:2001MAR30	LG:337810.20:2001MAR30	LG:463420.1:2001MAR30		LG:1080918.1:2001MAR30	LG:1093747.15:2001MAR30	LG:1093747.15:2001MAR30	LG:1096896.47:2001MAR30			LG:1098931.39:2001MAR30

1.20E-05

E-value

SEQ ID NO:

3.90E-35 2.80E-21 3.20E-09

6.80E-06 1.20E-10

1.80E-24

2.00E-26

2.50E-12

2.40E-30

1,40E-80 6.90E-33 3.10E-08

1.00E-08

1.90E-124

1.50E-04

2.00E-72

8.30E-60

2.30E-07

1.00E-10

7.70E-04 2.30E-22 9.30E-301

1.00E-57

Carbamoyl-phosphate synthase L chain, N-

Carboxyl_trans CPSase_L_chain

forward 2 forward 2

524

biotin_lipoyl

2514 forward 1

2314 5012

G:1098931.39:2001MAR30 G:1098931.39:2001MAR30 G:1098931.39:2001MAR30

\$ \$ \$ \$ \$

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6721 895 terminal domain

Blotin-requiring enzyme Carboxyl transferase domain

4.00E-22

2.90E-07

1.10E-06

4.10E-74

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E-value 5.00E-142	7.00E-07 1.80E-06 6.40E-20	4.70E-04	2.90E-102	2.90E-11	3.80E-10	9.10E-07	4.80E-25	5.70E-62	3.40E-36		2.30E-50		5.40E-08	7.60E-06	1.30E-40	1.20E-07	3.80E-10	2.20E-06	8.00E-21	1.60E-06	1.50E-58	6.20E-08	1.00E-23	1.30E-27	1.10E-10	7.50E-16
Pfam Description Carbamoyl-phosphate synthase L chain, ATP		Zinc finger, C3HC4 type (RING finger) RNA recognition motif, (a.k.a. RRM, RBD, or RNP	domain) GTPase-activator protein for Ras-like GTPase	Ankyrin repeat	Ankyrin repeat	Ankyrin repeat	Death domain	ZU5 domain	Eukaryotic initiation factor 5A hypusine, DNA-	binding OB fold	Eukaryotic initiation factor 5A hypusine, SH3-like	barrel domain	Elongation factor Tu GTP binding domain	Elongation factor Tu GTP binding domain	Elongation factor Tu C-terminal domain	Amino acid permease	KRAB box	Zinc finger, C2H2 type	KRAB box	Zinc finger, C2H2 type	Tropomyosin	Tropomyosin	Cadherin domain	Homeobox domain	SPRY domain	Ublquitin carboxyl-terminal hydrolase family 2
Pfam Hit CPSase_L_D2	transmembrane4 transmembrane4 WWE	24-C3HC4	RasGAP	ank	ank	ank	death	SUS	elF-5a		elF-5a_N	•	GTP_EFTU	GTP_EFTU	GTP_EFTU_D3	aa_permeases	KRAB	zf-C2H2	KRAB	zf-C2H2	Tropomyosin	Tropomyosin	cadherin	homeobox	SPRY	UCH-2
Stop Frame 1675 forward 2	forward 1 forward 2 forward 2	forward 2 forward 3	forward 2	forward 3		forward 2		forward 3	forward 2		325 forward 2		forward 3	forward 1	forward 3	forward 2	forward 1	forward 1	forward 2	forward 2	forward 3	forward 2	forward 3	forward 3	forward 1	forward 2
Stop 1675	792 733 958	676 545	4501	2246	408	795	4511	3095	538		325		554	504	154	1810	366	2262	556	1432	1151	1189	2114	968	930	1648
Start 899	88 197 731	333	3974	2148	310	698	4260	2781	329		<u></u>		8	8	864	257	274	2194	434	1364	480	458	1845	726	295	1388
Template ID LG:1098931.39:2001MAR30	LG:1100823.1:2001MAR30 LG:1100823.1:2001MAR30 LG:1166387.1:2001MAR30	LG:1166387.1:2001MAR30 LG:1383036.49:2001MAR30	LG:1452353.14:2001MAR30	LG:1452435.15:2001MAR30	LG:1452435.15:2001MAR30	LG:1452435.15:2001MAR30	LG:1452435.15:2001MAR30	LG:1452435.15:2001MAR30	LG:1498774.1:2001MAR30		LG:1498774.1:2001MAR30		LG:197180.1:2001MAR30	LG:197180.1:2001MAR30	LG:197180.1:2001MAR30	LG:199489.1:2001MAR30	LG:201908.3:2001MAR30	LG:201908.3:2001MAR30	LG:247245.26:2001MAR30	LG:247245.26:2001MAR30	LG:256365.2:2001MAR30	LG:256365.2:2001MAR30	LG:332923.4:2001MAR30	LG:335276.1:2001MAR30	LG:350272.2:2001MAR30	LG:350921.2:2001MAR30
SEQ ID NO:	882	. T. 22	73	74	74	74	74	74	75		75		92	76	76	77	78	. 78	79	79	80	8	83	82	83	28

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E-value 9.30E-91 1.00E-19 6.60E-44 2.40E-45 3.80E-23 1.70E-63 1.40E-05 1.50E-07 1.90E-17 5.60E-09 6.70E-29 1.30E-20 1.30E-13 3.00E-21 2.90E-09 6.70E-29 1.70E-07 2.30E-133 1.70E-07	7.70E-07 1.30E-16 2.60E-09 2.80E-28 9.50E-27 6.80E-10 5.10E-08
Pfam Description Tropomodulin Zinc-binding dehydrogenase Ion transport protein K+ channel tetramerisation domain K+ channel tetramerisation domain K+ channel tetramerisation domain Ribosomal protein L30p/L7e Acyl CoA binding protein Proprotein convertase P-domain Subtilase family Calcineurin-like phosphoesterase ADP-ribosylation factor family KRAB box Nitroreductase family Ras family ADP-ribosylation factor family Calcineurin-servese (GNAT) family Acetyltransferase (GNAT) family Acetyltransferase PDZ domain Ras family Galactosyltransferase PDZ domain (Also known as DHR or GLGF). Rap/ran-GAP Zinc finger, C2H2 type Zinc finger, C2H2 type	Zinc tinger, C2H2 type IPT/TIG domain DEAD/DEAH box helicase Helicase conserved C-terminal domain Ublquitin carboxyl-terminal hydrolase family 2 WD domain, G-beta repeat WD domain, G-beta repeat
Pfam Hit Tropomodulin adh_zinc ion_trans K_tetra Ribosomal_L30 ACBP Peptidase_S8 Peptidase_S8 Retiliophos arf KRAB Nitroreductase ras Acetyltransf arf DnaJ ras Galactosyl_T PDZ Rap_GAP zf-C2H2 zf-C2H2	zt-C2H2 11G DEAD hellcase_C UCH-2 WD40
Stop Frame 1197 forward 1 1222 forward 2 1272 forward 2 1272 forward 2 1274 forward 2 1254 forward 1 1529 forward 2 1254 forward 2 1254 forward 2 1255 forward 2 1255 forward 2 1256 forward 2 1256 forward 2 1257 forward 1 1258 forward 1 1258 forward 1 1259 forward 1 1256 forward 1	1326 forward 1 1948 forward 2 807 forward 1 1805 forward 3 823 forward 2 2502 forward 1 196 forward 2
	1258 13 1655 19 106 88 1587 18 638 88 83 25 16
	LG: 1090358. 10:200 IMAR30 LG: 1095833.9:200 IMAR30 LG: 1383121.25:200 IMAR30 LG: 1384609.2:200 IMAR30 LG: 1398465. 1:200 IMAR30 LG: 1398465. 1:200 IMAR30
SEQ	2522258

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E-value 4. 10E-57 3.30E-28 7.40E-08 1.50E-27 1.60E-17 5.20E-11 1.00E-14 3.60E-23 3.70E-53 5.40E-04 3.60E-27 2.80E-09 5.50E-10 3.00E-06 1.30E-07 7.00E-07 7.00E-07 1.10E-06 3.70E-06 3.70E-06 3.70E-07 7.00E-07 7.00E-07 1.10E-06 3.70E-09	2.90E-12 4.70E-12 8.20E-13 4.00E-107
Pfam Description 7 transmembrane receptor (Secretin family) Cadherin domain Latrophilin/CL-1-like GPS domain Hormone receptor domain Laminin EGF-like (Domains III and V) Laminin G domain Patched family FGGY family of carbohydrate kinases, N- terminal domain Cobalamin synthesis protein/P47K EF hand S-100/ICaBP type calcium binding domain Rhodanese-like domain FYVE zinc finger GGL domain Kelch motif BIG1 family Immunoglobulin domain Zinc finger, C2H2 type	SPRY domain B-box zinc finger. Zinc finger, C3HC4 type (RING finger) Reficulon
Pfam Hit 7tm_2 cadherin EGF GPS HRM aminin_G Patched FGGY cobW efhand S_100 Rhodanese FYVE G-gamma Kelch Anti_proliferat ig zf-C2H2 zf-C2H2 zf-C2H2 mm LIM AAA	SPRY zf-B_box zf-C3HC4 Reficulon
Stop Frame 7762 forward 2 1402 forward 2 4741 forward 2 6004 forward 2 5821 forward 2 2034 forward 2 1172 forward 3 1172 forward 3 1173 forward 1 1053 forward 1 1053 forward 1 1054 forward 1 290 forward 1 397 forward 1 372 forward 1 372 forward 1 372 forward 2 383 forward 1 372 forward 2 383 forward 3 695 forward 3	
Start 7031 1124 4646 6857 5831 194 194 194 194 194 194 194 194 194 19	0 4
Template ID LG:1453417.10:2001MAR30 LG:1453417.10:2001MAR30 LG:1453417.10:2001MAR30 LG:1453417.10:2001MAR30 LG:1453417.10:2001MAR30 LG:1453417.10:2001MAR30 LG:1453417.10:2001MAR30 LG:1453417.10:2001MAR30 LG:148485.5:2001MAR30 LG:1508275.1:2001MAR30 LG:1509277.1:2001MAR30 LG:1509277.1:2001MAR30 LG:19826.1:2001MAR30 LG:19826.1:2001MAR30 LG:19826.1:2001MAR30 LG:198276.1:2001MAR30 LG:200704.1:2001MAR30 LG:206593.3:2001MAR30 LG:206593.3:2001MAR30 LG:205593.3:2001MAR30 LG:205593.3:2001MAR30 LG:227500.5:2001MAR30 LG:227722.7:2001MAR30 LG:227722.7:2001MAR30 LG:227722.7:2001MAR30	LG:233761.4:2001MAR30 LG:233761.4:2001MAR30 LG:233761.4:2001MAR30 LG:234326.67:2001MAR30
SEQ ID NO: 107 107 107 107 107 107 107 107 107 107	123

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E-value 1.20E-23 6.40E-26	2.90E-21 3.60E-06 4.40E-57	1.00E-90 5.20E-11 1.30E-61 9.70E-24	6.70E-27 3.00E-15 1.30E-14	1.20E-11 1.50E-07	9.00E-13 7.00E-21 2.90E-08	8.70E-06 3.90E-14	2.70E-11 4.60E-08	1.50E-15 4.40E-13	1.10E-31 3.20E-23	3.40E-34 4.00E-42	7.50E-17 6.60E-37
Pfam Description BAF60b domain of the SWIB complex RNA recognition motif. (a.k.a. RRM, RBD, or RNP	RNA polymerases L / 13 to 16 kDa subunit PHD-finger Protein phosphatase 2C	MraW methylase family PHD-finger SET domain CXXC zinc finger	DHHC zinc finger domain CUB domain Sushi domain (SCR repeat)	Ankyrin repeat Ankyrin repeat	BIB/POZ domain FYVE zinc finger WD domain, G-beta repeat	Calponin homology (CH) domain LIM domain	LIM domain, G-beta repeat	FYVE zinc finger PH domain Phoces domain	Appr-1"-p processing enzyme family WWE domain	Integrase core domain BTB/POZ domain	Kelch motif Dual specificity phosphatase, catalytic
Pfam Hit SWIB rrm	RNA_pol_L PHD PP2C	Methyltransf_5 PHD SET zf-CXXC	zf-DHHC CUB sushi	ank	FYVE WD40	₽ E G	MD WD 40	FYVE PH Phogre	Alpp	N-0 BTB	Kelch DSPc
Stop Frame 1242 forward 1 619 forward 2	290 forward 3 1346 forward 3 1038 forward 1	1643 forward 3 4679 forward 3 11627 forward 3 3380 forward 3	718 forward 2 1500 forward 1 1692 forward 1		515 forward 3 3444 forward 1 2018 forward 3		_	2133 forward 1848 forward 1476 forward			•
Start Sta 1003 12 404 61	78 24 1206 13 241 10	-056			3253 34 1908 20			1936 21 1567 18 913 14			
Template ID LG:236056.27:2001MAR30 LG:253889.31:2001MAR30	LG:270833.135:2001MAR30 LG:292613.7:2001MAR30 LG:331546.2:2001MAR30		LG:338010.8:2001MAR30 LG:344597.1:2001MAR30 LG:344597.1:2001MAR30		LG:34/301.2:2001MAR30 LG:347361.2:2001MAR30 LG:349293.17:2001MAR30	LG:410595.19:2001MAR30 LG:411151.35:2001MAR30		LG:475378.1:2001MAR30 LG:475378.1:2001MAR30 LG:475378.1:2001MAR30			
SEQ ID NO: 125 126	127 128 129	85 E E E E	132 133 133	134	13 54 13 55	136 137	138 139	041 041 041	14 14	142 143	£ 4 4

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E-value 1.70E-19 5.20E-07 4.80E-10 3.10E-05 2.90E-04 5.30E-04 6.30E-04 6.30E-04 6.30E-04 6.30E-04 7.30E-142 7.30E-142 7.30E-142 7.30E-142 7.30E-142 7.30E-04 1.50E-26 1.60E-07 8.60E-07 8.60E-07 1.70E-05 1.60E-04	1.60E-48 5.00E-65 2.40E-07 1.70E-18 1.30E-06
Pfam Description Glutathlone peroxidase SH3 domain Zinc finger, C3HC4 type (RING finger) Leucine rich repeat C-terminal domain PMP-22/EMP/MP20/Claudin family Zinc finger, C2H2 type Sir2 family Putative transcriptional regulator SAM domain (Sterile alpha motif) Protein of unknown function, DUF259 mbt repeat Vippee putative zinc-binding protein MA3 domain Kinesin motor domain Kinesin motor domain KRAB box Zinc finger, C2H2 type Zinc f	Putative GTP-ase activating protein for Arf Pyridoxal-phosphate dependent enzyme Zinc finger, C2H2 type KRAB box Zinc finger, C2H2 type
Pfam Hit GSHPx SH3 Zf-C3HC4 LRRCT MP22_Claudin Zf-C2H2 SAM DUF232 SAM DUF232 SAM DUF259 mbt Yippee MA3 Kinesin pkinase KRAB Zf-C2H2 Zf	ArfGap PALP zf-C2H2 KRAB zf-C2H2
	499 forward 2 1007 forward 3 494 forward 3 431 forward 3 1035 forward 1
	137 4 105 10 426 4 309 4 967 10
Template ID LG:977454.3:2001MAR30 LG:977724.12:2001MAR30 LG:977724.12:2001MAR30 LG:978215.19:2001MAR30 LG:981795.1:2001MAR30 LG:987322.4:2001MAR30 LG:987322.4:2001MAR30 LG:026242.7:2001MAR30 LG:026319.2:2001MAR30 LG:147541.44:2001MAR30 LG:238754.19:2001MAR30 LG:238754.19:2001MAR30 LG:238754.19:2001MAR30 LG:238754.19:2001MAR30 LG:147541.4:2001MAR30 LG:147541.4:2001MAY17 LI:1169981.13:2001MAY17 LI:1169981.13:2001MAY17 LI:1183156.3:2001MAY17	L:2049216.1:2001MAY17 L:2051624.2:2001MAY17 L:2121838.1:2001MAY17 L:2122954.8:2001MAY17 L:2122954.8:2001MAY17
SEQ ID NO. 145 I 146 I 1	167 168 169 169

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E-value	1.50E-06	1.90E-06	9.90E-06	7.60E-20	3.10E-22	1.20E-11	1.20E-04	4.20E-139		4.80E-94	2.90E-04	2.00E-12	6.80E-176	1.60E-22	1.10E-07	1.60E-07	1.90E-63	2.40E-06	2.20E-05	4.60E-83	2.20E-22	4.60E-58	5.40E-06	3.30E-43	3.60E-76	1.80E-24	5.20E-08		1.60E-26	7.30E-08	5.80E-09	2.50E-09
Pfam Description	Zinc finger, C2H2 type	Zinc finger, C2H2 type	Zinc finger, C2H2 type	Galactosyltransferase	PX domain	SH3 domain	Zinc finger, C2H2 type	Class I Histocompatibility antigen, domains	alpha 1 and 2	AMP-binding enzyme	Lectin C-type domain	SCP-like extracellular protein	Triosephosphate isomerase	KRAB box	Zinc finger, C2H2 type	Zinc finger, C2H2 type	Ribosomal protein S5	WW domain	Papain family cysteine protease	Ribosomal protein S7e	KRAB box	Signal peptidase I	Immunoglobulin domain	Extracellular link domain	STAT protein, DNA binding domain	KRAB box	LGN motif, putative GEF specific for G-alpha	GTPase	C2 domain	WW domain	WD domain, G-beta repeat	Uncharacterized protein family UPF0034
Pfam Hit	zf-C2H2	zf-C2H2	zf-C2H2	Galactosyl_T	¥.	SH3	zf-C2H2	MHC_I		AMP-binding	lectin_c	SCP	MI	KRAB	zf-C2H2	zf-C2H2	Ribosomal_S5	M	Peptidase_C1	Ribosomal_S7e	KRAB	Peptidase_S26	Ď	XIIX	STÄT_bind	KRAB	Goloco		8	*	WD40	UPF0034
p Frame	4 forward 3	6 forward 2	5 forward 3	7 forward 3	39 forward 2	6 forward 1	4 forward 3			2 forward 2	7 forward 3	6 forward 3	1 forward 2	8 forward 2	19 forward 3	33 forward 2	9 forward 2	5 forward 1	8 forward 3	8 forward 1	7 forward 3	15 forward 2	3 forward 3	6 forward 3	30 forward 1	5 forward 1	7 forward 2		1265 forward 3	979 forward 2	3 forward 1	8 forward 2
Start Sto	% 164	368 43	237 30		_					137 137	2166 2417	273 806	95 84	626 74				~	3 338		75 19	866 1345		822 110			2039 2107					1160 191
Template ID	LI:2198064.2:2001MAY17	LI:2206583.1:2001MAY17	LI:2206583.1:2001MAY17	LI:235663.6:2001MAY17	LI:236386.7:2001MAY17	LI:236386.7:2001MAY17	U:236654.3:2001MAY17	LI:256059.46:2001MAY17		U:279978.22:2001MAY17	U:311541.6:2001MAY17		LI:346123.1:2001MAY17	U:381211.5:2001MAY17	LI:381211.5:2001MAY17		LI:412197.82:2001MAY17	LI:412936.49:2001MAY17	LI:427792.139:2001MAY17	LI:450229.1:2001MAY17	LI:475565.243:2001MAY17	LI:764701.8:2001MAY17	U:024124.2:2001MAY17	U:024124.2:2001MAY17		U:056882.1:2001MAY17	L:059530.1:2001MAY17		L:089950.30:2001MAY17	U:1072906.38:2001MAY17	LI158936.4:2001MAY17	L:1173412.15:2001MAY17
ON QI Ø	170	171	171	172	173	173	174	175		176	177	177	178	179	179	179	<u>8</u>	181	182	183	184	185	186	186	187	188	189	,	<u>8</u>	6	192	<u>8</u>

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E-value 3.50E-26 2.70E-07 8.60E-07	1.20E-04 6.80E-26 3.60E-07 1.30E-16	1.20E-05 1.20E-05 1.20E-23 2.50E-06 1.20E-27	5.90E-22 1.90E-06 2.10E-04 1.70E-32	2.70E-36 2.90E-67 1.20E-10 6.20E-57 4.30E-04 1.90E-16	2.20E-06 1.20E-26 3.50E-05 4.90E-05 3.50E-08 4.40E-04 1.10E-22 9.80E-20 2.40E-49
Pfam Description KRAB box Zinc finger, C2H2 type	Zinc finger, C2H2 type KRAB box Zinc finger, C2H2 type PDZ domain (Also known as DHR or GLGF).	MORN repeat KRAB box Zinc finger, C2H2 type KRAB box	KRAB box Zinc finger, C2H2 type EF hand Mitochondrial carrier protein	GAI domain VHS domain PH domain RhoGAP domain WW domain Ribosomal protein L7Ae/L30e/S12e/Gadd45 family	Ankyrln repeat KRAB box Zinc finger, C2H2 type CUB domain Sushi domain (SCR repeat) UBX domain KRAB box Integrase DNA binding domain DEAD/DEAH box hellcase Helicase conserved C-terminal domain
Pfam Hit KRAB zf-C2H2 zf-C2H2	zf-C2H2 KRAB zf-C2H2 PDZ	MORN KRAB zf-C2H2 KRAB	KRAB zf-C2H2 efhand mito_carr	GAI VHS PH RhoGAP WW Rlbosomal_L7Ae	ank KRAB zf-C2H2 CUB sushi UBX KRAB integrase DEAD helicase_C
	forward 2 forward 2 forward 2 forward 1	forward 3 forward 3 forward 3			forward 3 forward 2 forward 1 forward 1 forward 3 forward 3 forward 3 forward 3
Stop 398 1076 725	307	577 293 836 322	382 943 203 1187	1028 515 774 1527 330 1262	530 310 1045 612 396 1361 725 1454 1802
Start 276 1008 657	431 185 724	26 26 26 26 26 26 26 26 26 26 26 26 26 2	260 875 117 912	84 427 1069 241 951	432 188 977 406 226 1122 135 570 657
Template ID U:1174279.14:2001MAY17 U:1174279.14:2001MAY17 U:1174809.1:2001MAY17	LI:1174809.1:2001MAY17 LI:1175131.1:2001MAY17 LI:1175131.1:2001MAY17 LI:1188801.10:2001MAY17	L:1189176.27:2001MAY17 L:197739.4:2001MAY17 L:197739.4:2001MAY17 L:2049016.1:2001MAY17	U:2049137.1:2001MAY17 U:2049137.1:2001MAY17 U:2051907.1:2001MAY17 U:2051907.1:2001MAY17	LIST 17996 13:200 IMAY 17 LIST 17996 13:200 IMAY 17 LIST 18683 15:200 IMAY 17	U:2121328.17:2001MAY17 U:2121802.5:2001MAY17 U:2121802.5:2001MAY17 U:2123406.9:2001MAY17 U:213406.9:2001MAY17 U:216129.45:2001MAY17 U:2186530.1:2001MAY17 U:2188206.2:2001MAY17 U:2189710.9:2001MAY17
SEQ ID NO: 194 195	861 861 861 861	198 199 200 200	202 202 203 203 203	20 20 20 20 20 20 20 20 20 20 20 20 20 2	206 207 207 208 208 210 212 212

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Pfam Description Ankyrin repeat Ankyrin repeat CXXC zinc finger Calponin homology (CH) domain PH domain Alpha adaptin AP2, C-terminal domain BTB/POZ domain RNB-like protein Protein of unknown function DUF101 KRAB box Zinc finger, C2H2 type Ubiquitin-conjugating enzyme BTB/POZ domain Immunoglobulin domain Zinc finger, C2H2 type KRAB box Zinc finger, C2H2 type KRAB box Zinc finger, C2H2 type Ribosomai L10 KRAB box Zinc finger, C2H2 type C2H2 type Ribosomai L10 KRAB box Zinc finger, C2H2 type Ribosomai L10 KRAB box Zinc finger, C2H2 type Ribosomai L10 Silvesomai L10 KRAB box Zinc finger, C2H2 type Ribosomai L10 Silvesomai L10 KRAB box Zinc finger, C2H2 type Ribosomai L10 Silvesomai L10 Silv	Sodium:solute symporter family ATP synthase (C/AC39) subunit Platelet-derived growth factor (PDGF) Protein kinase domain Major Intrinsic protein
Pfam Hilt ank ank ank ank ank ank ank ank act CCH CCH BTB RNB DUF101 KRAB 2f-C2H2 UQ_con BTB ig 2f-C2H2 KRAB 2f-C2H2 KRAB 2f-C2H2 K_tetra V-ATPase_C 2OG-Fell_Oxy ABC1 BAF BAF BAF ACT CCX	SSF vATP-synt_AC39 PDGF pkinase MIP
<u> </u>	1200 forward 1 845 forward 3 1410 forward 1 1231 forward 2 830 forward 3
	1 12 195 8 1174 1/ 265 12 84 8
Template ID U:2209335.2:2001MAY17 U:230980.13:2001MAY17 U:24421.37:2001MAY17 U:341998.1:2001MAY17 U:341998.1:2001MAY17 U:350771.42:2001MAY17 U:35423.6:2001MAY17 U:35423.6:2001MAY17 U:35423.6:2001MAY17 U:35423.6:2001MAY17 U:354287.3:2001MAY17 U:745251.1:2001MAY17 U:745251.1:2001MAY17 U:745251.1:2001MAY17 U:806211.3:2001MAY17 U:817062.8:2001MAY17 U:817062.8:2001MAY17 U:91726.16:2001MAY17 U:191726.16:2001MAY17 U:202270.2:2001MAY17 U:202270.2:2001MAY17 U:202270.2:2001MAY17 U:202776.11:2001MAY17 U:256442.1:2001MAY17 U:256442.1:2001MAY17 U:256442.1:2001MAY17 U:256442.1:2001MAY17 U:256442.1:2001MAY17 U:256442.1:2001MAY17 U:256442.1:2001MAY17 U:256442.1:2001MAY17	L:018494.1:2001MAY17 L:023518.2:2001MAY17 L:053488.46:2001MAY17 L:058298.27:2001MAY17 L:1110046.1:2001MAY17
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E-value 1.20E-22 1.70E-07 5.50E-27 1.70E-07	2.006-22 1.506-06 3.806-10 2.206-06	7.20E-21 2.70E-21 8.00E-57 4.50E-107	1.40E-30 2.70E-04 2.40E-169 3.80E-139	2.30E-32 8.60E-215 1.00E-67	1.50E-58 6.20E-08 5.70E-11 5.20E-08	5.00E-20 6.30E-68 8.40E-123 1.80E-06 2.20E-17 1.10E-125
Pfam Description KRAB box Zinc finger, C2H2 type Zinc finger, C2H2 type	SPFH domain / Band 7 family Zinc finger, C2H2 type KRAB box Zinc finger, C2H2 type	forward 1 sushi Sushi domain (SCR repeat) forward 3 disintegrin Disintegrin forward 3Pep_M12B_propep Reprolysin family propeptide forward 3 Reprolysin Reprolysin (M12B) family zinc metalloprotease	7 transmembrane receptor (rhodopsin family) Zinc finger, C2H2 type Eukaryotic-type carbonic anhydrase Eukaryotic-type carbonic anhydrase	Organic Anion Transporter Polypeptide (OATP) family, C-terminus Organic Anion Transporter Polypeptide (OATP) family, N-terminus	Tropomyosin Tropomyosin Beta/Gamma crystallin QXW lectlin repeat	MH1 domain MH2 domain MH2 domain Zinc finger, C2H2 type Plexin repeat Sema domain
Pfam Hit KRAB zf-C2H2 KRAB zf-C2H2	8and_7 zf-C2H2 KRAB zf-C2H2	sushi disintegrin 'ep_M12B_prope Reprolysin	7tm_1 zf-C2H2 carb_anhydrase carb_anhydrase	OATP_C OATP_N	Tropomyosin Tropomyosin crystall Ricin_B_lectin	MH1 MH2 zf-C2H2 PSI Sema
	forward 3 forward 2 forward 1 forward 1		forward 2 forward 1 forward 3 forward 3			forward 1 forward 2 forward 2 forward 1
Stop 296 965 411 2076	325 325 396 2262 1148	2073 1577 668 1298	346 346 1599 830	1669 2380	131 981 334 141	807 1626 733 2373 2166
Start 174 897 289 2008	257 257 274 2194	1873 1347 318 714	986 278 847 60	482 1898	480 458 119 1016	325 1093 2221 841
Template ID U:1166752.11:2001MAY17 U:1166752.11:2001MAY17 U:1173766.1:2001MAY17 U:1173766.1:2001MAY17	LI:1177952.4;2001MAY17 LI:1177952.4;2001MAY17 LI:1178064.3;2001MAY17 LI:1178064.3;2001MAY17	L:1190431.13:2001MAY17 L:199121.14:2001MAY17 L:199121.14:2001MAY17 L:199121.14:2001MAY17	LI:202630.5:2001MAY17 LI:2034488.1:2001MAY17 LI:2051434.8:2001MAY17 LI:2051434.8:2001MAY17	LI:218849.24:2001MAY17	LI:2199824.5:2001MAY17 LI:2199824.5:2001MAY17 LI:233018.32:2001MAY17 LI:233018.32:2001MAY17	L:286989.14:2001MAY17 L:286989.14:2001MAY17 L:345320.4:2001MAY17 L:355693.18:2001MAY17 L:355693.18:2001MAY17
SEQ ID NO: 242 243 243 243	242 245 245 245 245	247 248 248 248	249 250 251 251 253	253 253 253	25 25 25 25 25 25 25 25 25 25 25 25 25 2	257 257 258 259 259

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E-value 2.10E-23 1.20E-28 2.10E-37	2.30E-19 6.60E-44	2.40E-46 6.10E-26 2.50E-60	3.70E-13 2.20E-08 3.60E-05	5.50E-110 3.40E-36	2.30E-50	4.40E-56 4.90E-05	4.50E-18 5.20E-08	9.40E-13 2.40E-18	2.00E-176 9.60E-24	7.40E-05	1.70E-11	1.10E-05	8.60E-06 5.20E-14
Pfam Description IPT/TIG domain 7 transmembrane receptor (rhodopsin family) SRF-type transcription factor (DNA-binding and	Cadherin domain Ion transport protein	K+ channel tetramerisation domain Ribosomal protein L5 ribosomal L5P family C-terminus	Protein kinase domain Protein kinase domain Zinc finaer, C2H2 tvoe	Ugand-gated Ion channel Eukaryotic Initiation factor 5A hypusine, DNA-	Eukaryotic initiation factor 5A hypusine, SH3-like barrel domain	Acyl CoA binding protein Zinc finger, C3HC4 type (RING finger)	Ion transport protein TatD related DNase	Adenosine/AMP deaminase Sodium/hydrogen exchanger family	Sema domain KRAB box	Zinc finger, C2H2 type Spectrin repeat	Immunoglobulin domain	Zinc finger, C2H2 type Zinc finger, C2H2 type	Sushi domain (SCR repeat)
Pfam Hit TIG 7tm_1 SRF-TF	cadherin Ion_trans	K_Tetra Ribosomal_L5 Ribosomal_L5_C	pkinase pkinase zf-C2H2	lig_chan elF-5a	elF-5a_N	ACBP zf-C3HC4	ion_trans TatD_DNase	A_deaminase Na_H_Exchanger	Sema KRAB	zf-C2H2 spectrin	Ď	#-C2H2	efhand
frame forward 1 forward 2 forward 1	forward 2 forward 2	forward 2 forward 2	forward 3 forward 3	forward 1 forward 2	forward 2	forward 3 forward 2		forward 1 forward 3	forward 3 forward 2	forward 3		forward 2	
Stop 3807 1345 639	1930	268 2577	1594 1418 2003	2580 538	325	527 430	715	816 1742	1790 193	1727	701	<u> </u>	<u>\$</u> \$
Start 3553 599 463	1655 1637 274	976 107 278	614 798 1935	1753 329	101	261 281	8 월	10 537	<u>8</u> Ľ	1659 383	525	% %	1320
Template ID U:355693.18:2001MAY17 U:359876.1:2001MAY17 U:406664.32:2001MAY17	LI:410324.1:2001MAY17 LI:414376.12:2001MAY17	U:414376.12:2001MAY17 U:452089.1:2001MAY17 U:452089.1:2001MAY17	L:481614.43:2001MAY17 L:481614.43:2001MAY17 L:809605.2:2001MAY17	L:816437.25:2001MAY17 L:817827.5:2001MAY17	U:817827.5:2001MAY17	L:002345.15:2001MAY17 L:022629.5:2001MAY17	U:061031.4:2001MAY17 U:108232.2:2001MAY17	LI:1085493.16:2001MAY17 LI:1085513.2:2001MAY17	LI:1086797.9:2001MAY17 LI:1088446.1:2001MAY17	U:1088446.1:2001MAY17 U:1133764.3:2001MAY17	U:1147614.5:2001MAY17	L:1181710.1:2001MAY17	U:1188786.15:2001MAY17 U:145626.1:2001MAY17
SEQ ID NO: 259 260 261	262	26 20 26 4 50 26 4 50	5 55 265 265 265 265 265 265 265 265 265 2	267 268	268	269 270	271 272	2/3 274	275 276	276 277	278	279 280	281 282

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E-value 3.70E-04 2.00E-07 1.40E-07 7.60E-35 5.50E-14 8.60E-04 3.00E-06 1.90E-68 1.80E-04 4.80E-13 7.10E-14 7.70E-19 2.90E-39 3.80E-05 5.90E-08 8.10E-14 7.70E-19 8.10E-20 6.60E-45 7.70E-08 3.40E-11	5.70E-04 4.80E-09 4.20E-31	8.40E-56 1.10E-54 4.20E-05 8.00E-16 1.00E-08
Pfam Description Sushi domain (SCR repeat) Patched family SAP domain Miz zinc finger Kelch motif TPR Domain Immunoglobulin domain Protein kinase domain Protein kinase domain TPR Domain WD domain, G-beta repeat CUB domain, G-beta repeat CUB domain, G-beta repeat CUB domain, G-beta repeat CUB domain Transmembrane receptor (rhodopsin family) 3-oxo-5-alpha-steroid 4-dehydrogenase 3-oxo-5-alpha-steroid 4-dehydrogenase D-isomer specific 2-hydroxyacid dehydrogenase, NAD bindling domain SCAN domain Inc finger, C2H2 type PH domain Mbt repeat SAM domain (Sterile alpha motif) Zinc finger, C2HC type	Zinc finger C-x8-C-x3-H type (and similar). Ankyrin repeat Ribosomal protein L7Ae/L30e/S12e/Gadd45 family	Ets-domain ADP-ribosylation factor family ADP-ribosylation factor family BTB/POZ domain Kelch motif
Pfam Hit sushi Patched SAP Zf-MiZ Kelch TPR IG PR WD40 CUB 7fm_1 Steroid_dh SAN Zf-C2H2 PH mbt SAN Zf-C2HC	zf-CCCH ank Ribosomal_L7Ae	art art Kelch
Frame 52 forward 1 forward 1 forward 1 forward 1 forward 1 forward 1 forward 3 forward 2		5 forward 1 30 forward 1 7 forward 2 1 forward 3 2 forward 3
Start Stop 1328 1492 4 1749 103 207 1096 1254 646 783 670 771 1311 1493 1516 2352 504 605 300 410 501 842 81 803 424 846 513 878 1263 1688 1263 1686 1300 1587 404 625 1400 1594		319 555 826 1380 311 697 306 731 579 722
Template ID S U:145626.1:2001MAY17 U:147869.3:2001MAY17 U:151747.4:2001MAY17 U:198296.1:2001MAY17 U:200704.1:2001MAY17 U:2052097.2:2001MAY17 U:209351.22:2001MAY17 U:2191585.1:2001MAY17 U:2191585.1:2001MAY17 U:2191585.1:2001MAY17 U:2191585.1:2001MAY17 U:2191585.1:2001MAY17 U:2191585.1:2001MAY17 U:2191585.1:2001MAY17 U:2209684.5:2001MAY17 U:2209684.5:2001MAY17 U:222795.28:2001MAY17 U:228273.25:2001MAY17 U:228274201MAY17 U:228274201MAY17 U:228274201MAY17 U:2282741 U:2282741 U:2282741 U:2282741 U:2282741		L:245597.7:2001MAY17 L:256009.31:2001MAY17 L:256009.31:2001MAY17 L:262221.1:2001MAY17 L:332957.8:2001MAY17
282 284 284 284 285 286 287 287 293 294 295 295 297 297	30,00,00	303 304 305 305

E-value 1.70E-136 5.60E-05 6.80E-15 2.70E-20	1.40E-44 1.40E-44 9.40E-05 4.20E-04	3.20E-09 4.30E-51 2.10E-147 3.20E-07	3.30F-20 5.70E-08 3.90E-14 1.50E-17 1.10E-04	3.30E-19 1.60E-06 1.50E-15 4.40E-13 2.40E-07 3.40E-16	4.10E-11 1.70E-30 3.00E-08 1.30E-22 6.30E-06 6.20E-07
Pfam Description Eukaryotic initiation factor 4E Zinc finger, C2H2 type MYND finger RNA recognition motif. (a.k.a. RRM, RBD, or RNP domain)	ABC transporter ABC transporter EGF-like domain	Ankyrin repeat PAZ domain Piwl domain Ankyrin repeat	Ibix domain Ankyrin repeat LIM domain PDZ domain (Also known as DHR or GLGF). SH3 domain KRAB box	LIM domain Ankyrin repeat FYVE zinc finger PH domain RhoGEF domain Env gp36 protein (HERV/MIMTV type)	Integrase Zinc binding domain Integrase core domain Ankyrin repeat RNA recognition motif. (a.k.a. RRM, RBD, or RNP domain) SAM domain (Sterile alpha motif) Rieske (2Fe-2S) domain
Pfam Hit IF4E zf-C2H2 zf-MYND rm	ABC_tran ABC_tran EGF EGF	ank PAZ Piwi ank	ank ank PDZ SH3 KRAB	ank FYVE PH RhoGEF GP36	Integrase_Zn rve ank rrm SAM Rieske
Frame forward 2 forward 3 forward 1 forward 1	3 forward 1 6 forward 3 5 forward 3 5 forward 1				forward 2 forward 1 forward 1 forward 2 forward 2
Stop 844 401 1728 702	2013 56% 446 1215	980 1372 2713 904	2031 282 1438 483	2623 2623 2338 1966 2924	193 697 465 307 358 619
Start 197 330 1618 493	1477 5160 354 1123	882 962 1808 806	821 1861 43 1262 361	303 780 2426 2057 1403 2265	224 367 367 158 284
Template ID U:335352.13:2001MAY17 U:343844.7:2001MAY17 U:344528.1:2001MAY17 U:374578.27:2001MAY17	L:381993.13:2001MAY17 L:381993.13:2001MAY17 L:400373.2:2001MAY17 L:400373.2:2001MAY17	LI:400963.6:2001MAY17 LI:404874.8:2001MAY17 LI:404874.8:2001MAY17 LI:405158.18:2001MAY17	U:405889.22:2001MAY17 U:405889.22:2001MAY17 U:411151.31:2001MAY17 U:411151.31:2001MAY17 U:411313.51:2001MAY17	U:429817.44:2001MAY17 U:474134.23:2001MAY17 U:475378.3:2001MAY17 U:475378.3:2001MAY17 U:475378.3:2001MAY17 U:749588.15:2001MAY17	U:749588.15:2001MAY17 U:749588.15:2001MAY17 U:757736.17:2001MAY17 U:817278.4:2001MAY17 U:027320.5:2001MAY17 U:204635.5:2001MAY17
SEQ ID NO: 306 307 308 309	310 310 118 118	312 313 314 314	315 316 316 317 318	319 320 321 321 322	322 323 324 324 325

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E-value 1.10E-04 6.30E-39 5.80E-270 9.90E-35 1.10E-04 2.80E-07 4.10E-07 4.80E-16 2.00E-30 1.00E-07 4.80E-08 5.00E-05 5.00E-05 5.00E-05 6.20E-06 1.90E-06 1.90E-06 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08 1.60E-17 6.20E-08	2.70E-07 2.70E-27 2.30E-105 1.90E-05
Pfam Description PAP2 superfamily mbt repeat SAND family protein TB2/DP1, HVA22 family Cache domain Zinc finger, C2H2 type KRAB box Zinc finger, C2H2 type	KRAB box Surfactant associated polypeptide Zinc finger, C2H2 type
Pfam Hit PAP2 mbt DUF254 TB2_DP1_HVA22 Cache zf-C2H2 KRAB zf-C2H2 Tf-C2H2 Tf-C2H2 zf-C2H2 dank death Beach ank KRAB ank Ank KRAB since Aet_red ank Arran KRAB zf-C2H2	VWC KRAB PSAP zf-C2H2
Stop Frame 862 forward 2 1885 forward 2 415 forward 2 2179 forward 2 231 forward 1 235 forward 1 524 forward 1 524 forward 1 525 forward 1 526 forward 1 527 forward 2 367 forward 2 368 forward 2 369 forward 1 528 forward 2 367 forward 1 528 forward 2 367 forward 2 367 forward 3 779 forward 3	 .
Start	•
Template ID U:215532.38:2001MAY17 U:228319.6:2001MAY17 U:236589.24:2001MAY17 U:23444.3:2001MAY17 U:23444.3:2001MAY17 U:332404.20:2001MAY17 U:332404.20:2001MAY17 U:332404.20:2001JUN22 U:1501495.1:2001JUN22 U:1501495.1:2001JUN22 U:1501495.1:2001JUN22 U:1501495.1:2001JUN22 U:1501495.1:2001JUN22 U:1504584.10:2001JUN22 U:15006394.20:2001JUN22 U:1045853.23:2001JUN22 U:1045853.23:2001JUN22 U:1045853.23:2001JUN22 U:1045853.23:2001JUN22 U:10509358.6:2001JUN22 U:105328501.2:2001JUN22 U:135312.7:2001JUN22	LG:1365581.3:2001JUN22 LG:1383156.20:2001JUN22 LG:1501767.18:2001JUN22
SEQ ID NO. 327 323 333 333 333 333 333 333 333 333	350 351 352

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E-value 7.60E-33 6.60E-13 1.50E-08 5.40E-20 6.40E-21 8.10E-04 8.20E-22 9.60E-17 2.10E-22 3.60E-17 2.10E-22 3.60E-17 2.10E-22 3.60E-17 2.10E-22 3.60E-17 2.10E-74 2.70E-17 5.00E-19	2.60E-273 2.10E-07 7.60E-58 2.60E-30 1.00E-24 1.00E-19 6.10E-06 2.30E-09 2.30E-07 2.90E-05 1.00E-05
Pfam Description Fes/CIP4 homology domain SH3 domain Intermediate filament protein Adenovirus E1B 19K protein / small t-antigen Adenovirus E81 55K protein / large t-antigen PH domain IPR Domain KRAB box LIM domain KRAB box Zinc finger, C2H2 type BTB/POZ domain RNB-like protein RNB-like protein RNB-like protein Ribosomal L18p/L5e family PH domain Ankyrin repeat Glycosyltransferase family 25 (LPS blosynthesis protein)	protein) SAND family protein Tetraspanin family Smg-4/UPF3 family Mitochondrial carrier protein LEM domain Zinc-binding dehydrogenase EGF-like domain Low-density lipoprotein receptor domain class MAM domain. Zinc finger, C2H2 type BAR domain
Pfam Hit FCH SH3 filament Adeno_E1B_19K Adeno_E1B_55K PH TPR KRAB UIM KRAB zf-C2H2 BTB RNB RIBOSOMal_L18p PH ank Glyco_transf_25	DUF254 transmembrane4 Smg4_UPF3 mito_carr LEM adh_zinc EGF Idi_recept_a MAM zf-C2H2 BAR
Stop Frame 516 forward 1 2046 forward 1 1080 forward 1 454 forward 2 1751 forward 3 890 forward 3 2298 forward 1 411 forward 1 561 forward 1 561 forward 1 2398 forward 3 1568 forward 3 1568 forward 3 154 forward 3 2427 forward 3 2427 forward 3	forward 1 forward 2 forward 1 forward 1 forward 3 forward 3 forward 3 forward 3
Stop 516 2046 1080 390 454 1751 890 2298 411 561 561 2398 570 2132 314 2427	2418 1252 519 807 690 1258 998 650 650 650
Start 235 1876 202 202 59 600 594 2197 289 385 744 1500 208 1235 127 1791 216 1873	1186 77 85 514 559 272 903 531 87 582
Template ID LG:1501890.8:2001JUN22 LG:1501890.8:2001JUN22 LG:203434.23:2001JUN22 LG:204724.5:2001JUN22 LG:204724.5:2001JUN22 LG:204724.5:2001JUN22 LG:257107.16:2001JUN22 LG:353530.4:2001JUN22 LG:7684224.1:2001JUN22 LG:7680365.2:2001JUN22 LG:7680365.2:2001JUN22 LG:7690365.2:2001JUN22 LG:968691.1:2001JUN22 LG:9883076.7:2001JUN22 LG:9883076.7:2001JUN22 LG:9983076.7:2001JUN22 LG:998305.4:2001JUN22 LG:998305.4:2001JUN22 LG:998305.4:2001JUN22 LG:998305.4:2001JUN22	LG:979059.3:2001JUN22 LG:1045509.22:2001JUN22 LG:246935.4:2001JUN22 LG:321069.2:2001JUN22 LG:346724.14:2001JUN22 LG:346724.14:2001JUN22 LG:978620.7:2001JUN22 LG:978620.7:2001JUN22 LG:978620.7:2001JUN22 LG:978620.7:2001JUN22 LG:978620.7:2001JUN22 LG:978620.7:2001JUN22
SEQ ID NO. 353 353 354 355 355 355 355 355 355 355	367 368 369 370 373 373 373 374

	E-value	5.80E-05	9.50E-12	1.50E-04	6.30E-06	1.10E-84	3.20E-31	1.60E-06	1.805-04	2.80E-27	4.00E-21	3.80E-101	8.20E-05	4.80E-09	5.80E-11	6.60E-45	7.70E-08	3.40E-11	3.50E-46	4.00E-21	3.30E-07	2.70E-59	1.00E-23	1.70E-20	8.00E-194	7.50E-77	3.10E-23	4.60E-08	1.10E-05	1.10E-04	3.80E-11
	Pfam Description	RhoGEF domain	SH3 domain	WW domain	SAM domain (Sterile alpha motif)	Protein kinase domain	SH2 domain	Ankyrin repeat	Ankyrin repeat	K+ channel tetramerisation domain	Kinase associated domain 1	Protein kinase domain	UBA/TS-N domain	Ankyrin repeat	LIM domain	mbt repeat	SAM domain (Sterile alpha motif)	Zinc finger, C2HC type	SAND domain	PH domain	Mitochondrial carrier protein	Ras family	Cadherin domain	Mitochondrial carrier protein	Sec1 family	Reeler domain	Thrombospondin type 1 domain	WD domain, G-beta repeat	Zinc finger, C2H2 type	Notch (DSL) domain	Cyclin, N-terminal domain
TABLE 3	Pfam Hit	RhoGEF	S H 3	**	SAM	pkinase	SH2	ank	ank	K_tetra	₹	pkinase	UBA	ank	M	mpt	SAM	zf-C2HC	SĄND	Æ	· mito_carr	SD.	cadherin	mito_carr	Seci	Reeler	tsp_1	WD40	zf-C2H2	notch	cyclin
	stop Frame	1615 forward 2	3357 forward 1	368 forward 3	358 forward 2	2028 forward 1	870 forward 1	362 forward 3	123 forward 1	572 forward 3	2654 forward 3	1232 forward 3	1409 forward 3	883 forward 2	1042 forward 2	625 forward 2	1594 forward 2	1102 forward 2	585 forward 1	824 forward 3	2539 forward 2	715 forward 2	2665 forward 2	695 forward 3	1788 forward 1	552 forward 1	2028 forward 1	141 forward 1	154 forward 2	294 forward 1	1064 forward 3
		13%	•		158	_							_		698			1007					•		•				86		969
	Template ID	LG:007574.21:2001JUN22	LG:007574.21:2001JUN22	LG:013856.18:2001JUN22	LG:027320.7:2001JUN22	LG:077967.9:2001JUN22	LG:077967.9:2001JUN22	LG:128475.9:2001JUN22	LG:128475.9:2001JUN22	LG:1398104.15:2001JUN22	LG:1454018.10:2001JUN22	LG:1454018.10:2001JUN22	LG:1454018.10:2001JUN22	LG:221548.14:2001JUN22	LG:227500.5:2001JUN22	LG:228273.22:2001JUN22	LG:228273.22:2001JUN22	LG:228273.22:2001JUN22	LG:235432.1:2001JUN22	LG:236904.20:2001JUN22	LG:253193.21:2001JUN22	LG;332161.3;2001JUN22	LG:332923.5:2001JUN22	LG:343500.27:2001JUN22	LG:369703.9:2001JUN22	LG:415378.3:2001JUN22	LG:415378.3:2001JUN22	LG:458583.1:2001JUN22	LG:7690373.1:2001JUN22	LG:898324.13:2001JUN22	LG:979167.5:2001JUN22
	SEQ ID NO:	375	375	376	377	378	378	379	379	380	381	381	381	382	383	384	384	384	385	386	387	388	389	390	391	392	392	393	394	395	366

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
66	LG:1080918.1:2001MAR30	1	788	forward 1	TM	Non-Cytosolic
66	LG:1080918.1:2001MAR30	789	811	forward 1	TM	Transmembrane
66	LG:1080918.1:2001MAR30	812	818	forward 1	TM	Cytosolic
67	LG:1093747.15:2001MAR30	1	14	forward 1	TM	Non-Cytosolic
67	LG:1093747.15:2001MAR30	15	32	forward 1	TM	Transmembrane
67	LG:1093747.15:2001MAR30	33	43	forward 1	TM	Cytosolic
67	LG:1093747.15:2001MAR30	44	66	forward 1	TM	Transmembrane
67	LG:1093747.15:2001MAR30	67	831	forward 1	TM	Non-Cytosolic
67	LG:1093747.15:2001MAR30	1	9	forward 2	TM	Non-Cytosolic
67	LG:1093747.15:2001MAR30	10	32	forward 2	TM	Transmembrane
67	LG:1093747.15:2001MAR30	33	43	forward 2	TM	Cytosolic
67	LG:1093747.15:2001MAR30	44	66	forward 2	TM	Transmembrane
67	LG:1093747.15:2001MAR30	67	830	forward 2	TM	Non-Cytosolic
68	LG:1096896.47:2001MAR30	1	491	forward 2	TM	Non-Cytosolic
68	LG:1096896.47:2001MAR30	492	514	forward 2	TM	Transmembrane
68	LG:1096896.47:2001MAR30	515	625	forward 2	TM	Cytosolic
68	LG:1096896.47:2001MAR30	626	648	forward 2	TM	Transmembrane
68	LG:1096896.47:2001MAR30	649	657	forward 2	TM	Non-Cytosolic
68	LG:1096896.47:2001MAR30	658	680	forward 2	TM	Transmembrane
68	LG:1096896.47:2001MAR30	681	729	forward 2	TM	Cytosolic
68	LG:1096896.47:2001MAR30	730	752	forward 2	TM	Transmembrane
68	LG:1096896.47:2001MAR30	753	792	forward 2	TM	Non-Cytosolic
69	LG:1098931.39:2001MAR30	1	430	forward 3	TM	Non-Cytosolic
69	LG:1098931.39:2001MAR30	431	448	forward 3	TM	Transmembrane
69	LG:1098931.39:2001MAR30	449	541	forward 3	TM	Cytosolic
69	LG:1098931.39:2001MAR30	542	564	forward 3	TM	Transmembrane
69	LG:1098931.39:2001MAR30	565	3052	forward 3	TM	Non-Cytosolic
70	LG:1100823.1:2001MAR30	1	31	forward 1	TM	Cytosolic
· 70	LG:1100823.1:2001MAR30	32	54	forward 1	TM	Transmembrane
70	LG:1100823.1:2001MAR30	55	68	forward 1	TM	Non-Cytosolic
70	LG:1100823.1:2001MAR30	69	91	forward 1	TM	Transmembrane
70	LG:1100823.1:2001MAR30	92	280	forward 1	TM	Cytosolic
70	LG:1100823.1:2001MAR30	1	98	forward 2	TM	Cytosolic
70	LG:1100823.1:2001MAR30	99	121	forward 2	TM	Transmembrane
70	LG:1100823.1:2001MAR30	122	226	forward 2	TM	Non-Cytosolic
70	LG:1100823.1:2001MAR30	227	249	forward 2	TM	Transmembrane
70	LG:1100823.1:2001MAR30	250	255	forward 2	TM	Cytosolic
70	LG:1100823.1:2001MAR30	256	278	forward 2	TM	Transmembrane
70	LG:1100823.1:2001MAR30	279	279	forward 2	TM	Non-Cytosolic
71	LG:1166387.1:2001MAR30	1	700	forward 1	TM	Non-Cytosolic
71	LG:1166387.1:2001MAR30	701	723	forward 1	TM	Transmembrane
71	LG:1166387.1:2001MAR30	724	804	forward 1	TM	Cytosolic
71	LG:1166387.1:2001MAR30	1	607	forward 3	TM ·	Non-Cytosolic
71	LG:1166387.1:2001MAR30	608	630	forward 3	TM	Transmembrane
71	LG:1166387.1:2001MAR30	631		forward 3	TM	Cytosolic
71	LG:1166387.1:2001MAR30	714		forward 3	TM	Transmembrane
71	LG:1166387.1:2001MAR30	737		forward 3	TM	Non-Cytosolic
71	LG:1166387.1:2001MAR30	780	802	forward 3	TM	Transmembrane
71	LG:1166387.1:2001MAR30	803	804	forward 3	TM	Cytosolic
72	LG:1383036.49:2001MAR30	ì		forward 1	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
72	LG:1383036.49:2001MAR30	227	249 forward 1	TM	Transmembrane
72	LG:1383036.49:2001MAR30	250	407 forward 1	TM	Cytosolic
72	LG:1383036.49:2001MAR30	408	430 forward 1	TM	Transmembrane
72	LG:1383036.49:2001MAR30	431	1130 forward 1	TM	Non-Cytosolic
72	LG:1383036.49:2001MAR30	1	719 forward 3	TM	Non-Cytosolic
72	LG:1383036.49:2001MAR30	720	742 forward 3	TM	Transmembrane
72	LG:1383036.49:2001MAR30	743	963 forward 3	TM	Cytosolic
72	LG:1383036.49:2001MAR30	964	986 forward 3	TM	Transmembrane
72	LG:1383036.49:2001MAR30	987	1129 forward 3	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	1326	1391 forward 3	SP	•
73	LG:1452353.14:2001MAR30	1	2943 forward 1	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	2944	2966 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	2967	2996 forward 1	TM	Cytosolic
73	LG:1452353.14:2001MAR30	2997	3019 forward 1	TM	Transmembrane .
73	LG:1452353.14:2001MAR30	3020	3042 forward 1	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3043	3060 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3061	3157 forward 1	TM	· Cytosolic
73	LG:1452353.14:2001MAR30	3158	3180 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3181	3580 forward 1	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3581	3603 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3604	3726 forward 1	TM	Cytosolic
. 73	LG:1452353.14:2001MAR30	3727	3749 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3750	3841 forward 1	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3842	3864 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30		3884 forward 1	TM	Cytosolic
73	LG:1452353.14:2001MAR30	3885	3907 forward 1	. TM	Transmembrane
73	LG:1452353.14:2001MAR30	3908	3916 forward 1	· TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3917	3935 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3936	3947 forward 1	TM	Cytosolic
73	LG:1452353.14:2001MAR30	3948	3967 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3968	3981 forward 1	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3982	4004 forward 1	TM	Transmembrane
73	LG:1452353.14:2001MAR30	4005	4144 forward 1	TM	Cytosolic
73	LG:1452353.14:2001MAR30	1	2903 forward 2	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	2904	2926 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	2927	2946 forward 2	TM	Cytosolic
73	LG:1452353.14:2001MAR30	2947	2969 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	2970	3006 forward 2	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3007	3029 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3030	3112 forward 2	TM	Cytosolic
73	LG:1452353.14:2001MAR30	3113	3132 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3133	3141 forward 2	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3142	3164 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3165	3168 forward 2	TM	Cytosolic
73	LG:1452353.14:2001MAR30	3169	3191 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3192	3243 forward 2	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	3244	3266 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3267	3300 forward 2	TM	Cytosolic
73	LG:1452353.14:2001MAR30	3301	3323 forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3324	3579 forward 2	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
73	LG:1452353.14:2001MAR30	3580	3602	forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3603	3846	forward 2	TM	Cytosolic
73	LG:1452353.14:2001MAR30	3847	3869	forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30	3870	3915	forward 2	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30			forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30			forward 2	TM	Cytosolic
73	LG:1452353.14:2001MAR30			forward 2	TM	Transmembrane
73	LG:1452353.14:2001MAR30			forward 2	TM	Non-Cytosolic
73	10 1450050 14 00011 44 000	. 1		forward 3	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	115		forward 3	TM	Transmembrane
73	LG:1452353.14:2001MAR30	138		forward 3	TM	Cytosolic
73	LG:1452353.14:2001MAR30	203		forward 3	TM	Transmembrane
73	LG:1452353.14:2001MAR30	226		forward 3	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	235		forward 3	TM	Transmembrane
73	LG:1452353.14:2001MAR30	258		forward 3	TM	Cytosolic
73	LG:1452353.14:2001MAR30	401		forward 3	TM	Transmembrane
73	LG:1452353.14:2001MAR30			forward 3	TM	Non-Cytosolic
73	LG:1452353.14:2001MAR30	438		forward 3	TM	Transmembrane
73	LG:1452353.14:2001MAR30	461		forward 3	TM	Cytosolic
73	LG:1452353.14:2001MAR30	618		forward 3	TM	Transmembrane
73	LG:1452353.14:2001MAR30	638		forward 3	TM	Non-Cytosolic
73 73	LG:1452353.14:2001MAR30				TM	Transmembrane
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Cytosolic
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Transmembrane
73 73	LG:1452353.14:2001MAR30			•	TM	Non-Cytosolic
73 73	LG:1452353.14:2001MAR30			forward 3	, TM	Transmembrane
· 73	LG:1452353.14:2001MAR30			forward 3	TM	
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Cytosolic Transmembrane
73 73	LG:1452353.14:2001MAR30				TM	
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Non-Cytosolic Transmembrane
73 73	LG:1452353.14:2001MAR30			forward 3	TM	
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Cytosolic Transmembrane
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Non-Cytosolic
73 73	LG:1452353.14:2001MAR30			forward 3	TM	•
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Transmembrane
73 73	LG:1452353.14:2001MAR30			forward 3	TM	Cytosolic Transmembrane
73 73	LG:1452353.14:2001MAR30			forward 3	TM	
73 74	LG:1452435.15:2001MAR30	1		forward 3	TM	Non-Cytosolic
74 74	LG:1452435.15:2001MAR30	•		forward 3		Non-Cytosolic Transmembrane
74 74	LG:1452435.15:2001MAR30			forward 3	TM	
74 75	LG:1498774.1:2001MAR30	_		forward 2	TM	Cytosolic
75 75] 205		forward 2	TM	Non-Cytosolic
	LG:1498774.1:2001MAR30	225			TM	Transmembrane
75 76	LG:1498774.1:2001MAR30	248		forward 1	TM	Cytosolic
76	LG:197180.1:2001MAR30] 1003		forward 1	TM	Non-Cytosolic
76	LG:197180.1:2001MAR30			forward 1	TM	Transmembrane
76	LG:197180.1:2001MAR30			forward 1	TM	Cytosolic
76	LG:197180.1:2001MAR30			forward 1	TM	Transmembrane
76 74	LG:197180.1:2001MAR30	_		forward 1	TM	Non-Cytosolic
76	LG:197180.1:2001MAR30	}		forward 3	TM	Non-Cytosolic
76	LG:197180.1:2001MAR30	708	730	forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
76	LG:197180.1:2001MAR30	731	736 forward	3 TM	Cytosolic
76	LG:197180.1:2001MAR30	737	759 forward	3 TM	Transmembrane
76	LG:197180.1:2001MAR30	760	1304 forward	3 TM	Non-Cytosolic
76	LG:197180.1:2001MAR30	1305	1327 forward	3 TM	Transmembrane
76	LG:197180.1:2001MAR30	1328	1338 forward	3 TM	Cytosolic
76	LG:197180.1:2001MAR30	1339	1361 forward		Transmembrane
76	LG:197180.1:2001MAR30	1362	1371 forward		Non-Cytosolic
77	LG:199489.1:2001MAR30	1	1505 forward		Non-Cytosolic
77	LG:199489.1:2001MAR30	1506	1528 forward		Transmembrane
77	LG:199489.1:2001MAR30		1534 forward		Cytosolic
77	LG:199489.1:2001MAR30		1552 forward		Transmembrane
77	LG:199489.1:2001MAR30		1566 forward		Non-Cytosolic
77	LG:199489.1:2001MAR30		1589 forward		Transmembrane
77	LG:199489.1:2001MAR30		1595 forward		Cytosolic
77	LG:199489.1:2001MAR30		1618 forward		Transmembrane
77	LG:199489.1:2001MAR30		1627 forward		Non-Cytosolic
77	LG:199489.1:2001MAR30		1650 forward		Transmembrane
, , 77	LG:199489.1:2001MAR30		1656 forward		Cytosolic
77	LG:199489.1:2001MAR30		1679 forward		Transmembrane
77	LG:199489.1:2001MAR30		1898 forward		Non-Cytosolic
77 .	LG:199489.1:2001MAR30	1	94 forward 2		Cytosolic
77 . 77	LG:199489.1:2001MAR30	95	113 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	114	122 forward 2		Non-Cytosolic
77	LG:199489.1:2001MAR30	123	142 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	143	154 forward 2		Cytosolic
, , 77	LG:199489.1:2001MAR30	155	177 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	178	217 forward 2		Non-Cytosolic
77	LG:199489.1:2001MAR30	218	240 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	241	244 forward 2		Cytosolic
77 ·	LG:199489.1:2001MAR30	245	267 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	268	304 forward 2		Non-Cytosolic
77	LG:199489.1:2001MAR30	305	327 forward 2		Transmembrane
, , 77	LG:199489.1:2001MAR30	328	347 forward 2		Cytosolic
,, 77	LG:199489.1:2001MAR30	348	370 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	371	394 forward 2		Non-Cytosolic
77	LG:199489.1:2001MAR30	395	414 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	415	443 forward 2		Cytosolic
77	LG:199489.1:2001MAR30	444	461 forward 2		Transmembrane
77 . 77	LG:199489.1:2001MAR30	462	465 forward 2		Non-Cytosolic
77	LG:199489.1:2001MAR30	466	488 forward 2		Transmembrane
77	LG:199489.1:2001MAR30	489	548 forward 2		
77 77	LG:199489.1:2001MAR30	549 549	.571 forward 2		Cytosolic Transmembrane
	LG:199489.1:2001MAR30				
77 77	LG:199489.1:2001MAR30	572 581	580 forward 2 600 forward 2		Non-Cytosolic
	•				Transmembrane
77 77	LG:199489.1:2001MAR30 LG:199489.1:2001MAR30	601	611 forward 2		Cytosolic
77 77	=	612	634 forward 2		Transmembrane
77 77	LG:199489.1:2001MAR30	635	638 forward 2		Non-Cytosolic
77 77	LG:199489.1:2001MAR30	639	658 forward 2		Transmembrane
77 77	LG:199489.1:2001MAR30	659	738 forward 2		Cytosolic
77	LG:199489.1:2001MAR30	739	761 forward 2	2 TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
77	LG:199489.1:2001MAR30	762	790	forward 2	TM	Non-Cytosolic
77	LG:199489.1:2001MAR30	791	808	forward 2	TM	Transmembrane
77	LG:199489.1:2001MAR30	809	814	forward 2	TM	Cytosolic
77	LG:199489.1:2001MAR30	815	837	forward 2	TM	Transmembrane
77	LG:199489.1:2001MAR30	838	1065	forward 2	TM	Non-Cytosolic
77	LG:199489.1:2001MAR30	1066	1088	forward 2	TM	Transmembrane
7 7	LG:199489.1:2001MAR30		1231	forward 2	TM	Cytosolic
77	LG:199489.1:2001MAR30			forward 2	TM	Transmembrane
7 7	LG:199489.1:2001MAR30			forward 2	TM	Non-Cytosolic
77	LG:199489.1:2001MAR30			forward 2	TM	Transmembrane
77	LG:199489.1:2001MAR30			forward 2	TM	Cytosolic
77	LG:199489.1:2001MAR30			forward 2	TM	Transmembrane
 77	LG:199489.1:2001MAR30	1648		forward 2	TM	Non-Cytosolic
77 '	LG:199489.1:2001MAR30			forward 2	TM	Transmembrane
77	LG:199489.1:2001MAR30			forward 2	TM	Cytosolic
 7 7	LG:199489.1:2001MAR30	1		forward 3	TM	Non-Cytosolic
 7 7	LG:199489.1:2001MAR30	644		forward 3	TM	Transmembrane
 7 7	LG:199489.1:2001MAR30	667		forward 3	TM	Cytosolic
7 7	LG:199489.1:2001MAR30	739		forward 3	TM	Transmembrane
77	LG:199489.1:2001MAR30	762		forward 3	TM	Non-Cytosolic
77	LG:199489.1:2001MAR30	801		forward 3	TM	Transmembrane
. 7 7	LG:199489.1:2001MAR30	824		forward 3	TM	Cytosolic
77	LG:199489.1:2001MAR30	1231		forward 3	TM	Transmembrane
7 7 .	LG:199489.1:2001MAR30	1254		forward 3	TM	Non-Cytosolic
77	LG:199489.1:2001MAR30			forward 3	TM	Transmembrane
 77	LG:199489.1:2001MAR30			forward 3	TM	Cytosolic
, , 77	LG:199489.1:2001MAR30			forward 3	TM	Transmembrane
 77	LG:199489.1:2001MAR30			forward 3	TM	Non-Cytosolic
77	LG:199489.1:2001MAR30			forward 3	TM	Transmembrane
. , 77	LG:199489.1:2001MAR30			forward 3	TM	Cytosolic
 77	LG:199489.1:2001MAR30			forward 3	TM	Transmembrane
 77	LG:199489.1:2001MAR30			forward 3	TM	Non-Cytosolic
78	LG:201908.3:2001MAR30	1		forward 3	TM	Non-Cytosolic
78	LG:201908.3:2001MAR30			forward 3	TM	Transmembrane
78	LG:201908.3:2001MAR30			forward 3	TM	Cytosolic
79	LG:247245.26:2001MAR30	1		forward 2	TM	Non-Cytosolic
79	LG:247245.26:2001MAR30	742		forward 2	TM	Transmembrane
79	LG:247245.26:2001MAR30	765		forward 2	TM	Cytosolic
 79	LG:247245.26:2001MAR30	1		forward 3	TM	Non-Cytosolic
 79	LG:247245.26:2001MAR30	775		forward 3	TM	Transmembrane
79	LG:247245.26:2001MAR30	798		forward 3	TM	Cytosolic
79	LG:247245.26:2001MAR30	802		forward 3	TM	Transmembrane
79	LG:247245.26:2001MAR30	825		forward 3	TM	Non-Cytosolic
80	LG:256365.2:2001MAR30	1		forward 2	TM	Cytosolic
80	LG:256365.2:2001MAR30	28		forward 2	TM	Transmembrane
80	LG:256365.2:2001MAR30	46		forward 2	TM	Non-Cytosolic
81	LG:332923.4:2001MAR30	1		forward 1	TM	Cytosolic
81	LG:332923.4:2001MAR30	37		forward 1	TM	Transmembrane
81	LG:332923.4:2001MAR30	60		forward 1	TM	Non-Cytosolic
81	LG:332923.4:2001MAR30	603		forward 1	TM	Transmembrane
01	LG,JJZ7ZJ.4.ZJJ IIVIAKJJ	w	020	ioiwara I	IIVI	

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
81	LG:332923.4:2001MAR30	626	645 forward 1	TM	Cytosolic
81	LG:332923.4:2001MAR30	646	664 forward 1	TM	Transmembrane
81	LG:332923.4:2001MAR30	665	1438 forward 1	TM	Non-Cytosolic
81	LG:332923.4:2001MAR30	1	852 forward 3	TM	Non-Cytosolic
81	LG:332923.4:2001MAR30	853	875 forward 3	TM	Transmembrane
81	LG:332923.4:2001MAR30	876	1187 forward 3	TM	Cytosolic
81	LG:332923.4:2001MAR30	1188	1210 forward 3	TM	Transmembrane
81	LG:332923.4:2001MAR30	1211	1234 forward 3	TM	Non-Cytosolic
81	LG:332923.4:2001MAR30	1235	1257 forward 3	TM	Transmembrane
81	LG:332923.4:2001MAR30	1258	1437 forward 3	TM	Cytosolic
82	LG:335276.1:2001MAR30	1	493 forward 1	TM	Non-Cytosolic
82	LG:335276.1:2001MAR30	494	516 forward 1	TM	Transmembrane
82	LG:335276.1:2001MAR30	517	613 forward 1	TM	Cytosolic
82	LG:335276.1:2001MAR30	614	636 forward 1	TM	Transmembrane
82	LG:335276.1:2001MAR30	637	739 forward 1	TM	Non-Cytosolic
82	LG:335276.1:2001MAR30	740	762 forward 1	TM	Transmembrane
82	LG:335276.1:2001MAR30	763	802 forward 1	TM	Cytosolic
82	LG:335276.1:2001MAR30	803	825 forward 1	TM	Transmembrane
82	LG:335276.1:2001MAR30	826	845 forward 1	TM	Non-Cytosolic
83	LG:350272.2:2001MAR30	1	529 forward 1	TM	Non-Cytosolic
83	LG:350272.2:2001MAR30	530	552 forward 1	TM	Transmembrane
83	LG:350272.2:2001MAR30	553	559 forward 1 ·	TM	Cytosolic
84	LG:350921.2:2001MAR30	. 1	566 forward 1 .	TM	Non-Cytosolic
84	LG:350921.2:2001MAR30	567	589 forward 1	TM	Transmembrane
84	LG:350921.2:2001MAR30	590	685 forward 1.	TM	Cytosolic -
84 .	LG:350921.2:2001MAR30	686	708 forward 1	TM	Transmembrane
· 84	LG:350921.2:2001MAR30	709	711 .forward 1	TM	Non-Cytosolic
84	LG:350921.2:2001MAR30	712	734 forward 1	TM	Transmembrane
84	LG:350921.2:2001MAR30	· 735	831 forward 1	· TM	Cytosolic
84	LG:350921.2:2001MAR30	1	550 forward 2	TM	Non-Cytosolic
84	LG:350921.2:2001MAR30	551	573 forward 2	TM	Transmembrane
84	LG:350921.2:2001MAR30	574	673 forward 2	TM	Cytosolic
84	LG:350921.2:2001MAR30	674	693 forward 2	TM	Transmembrane
84	LG:350921.2:2001MAR30	694	702 forward 2	TM	Non-Cytosolic
84	LG:350921.2:2001MAR30	703	725 forward 2	TM	Transmembrane
84	LG:350921.2:2001MAR30	726	830 forward 2	TM	Cytosolic
85	LG:406568.1:2001MAR30	1	618 forward 2	TM	Non-Cytosolic
85	LG:406568.1:2001MAR30	619	636 forward 2	TM	Transmembrane
85	LG:406568.1:2001MAR30	637	656 forward 2	TM	Cytosolic
85	LG:406568.1:2001MAR30	657	679 forward 2	TM	Transmembrane **
85	LG:406568.1:2001MAR30	680	693 forward 2	TM	Non-Cytosolic
85 .	LG:406568.1:2001MAR30	694	716 forward 2	TM	Transmembrane
85	LG:406568.1:2001MAR30	717	770 forward 2	TM	Cytosolic
86	LG:411043.3:2001MAR30	1	99 forward 1	TM	Cytosolic
86	LG:411043.3:2001MAR30	100	122 forward 1	TM	Transmembrane
	LG:411043.3:2001MAR30	123	181 forward 1	TM	Non-Cytosolic
	LG:411043.3:2001MAR30	182	201 forward 1	TM	Transmembrane
	LG:411043.3:2001MAR30	202	436 forward 1	TM	Cytosolic
	LG:411043.3:2001MAR30	437	459 forward 1	TM	Transmembrane
86	LG:411043.3:2001MAR30	460	685 forward 1	TM	Non-Cytosolic

SEQ ID NO:	Template iD	Start	Stop Frame	Domain	Topology
87	LG:414376.20:2001MAR30	1	464 forward 2	TM	Non-Cytosolic
87	LG:414376.20:2001MAR30	465	487 forward 2	TM	Transmembrane
87	LG:414376.20:2001MAR30	488	542 forward 2	TM	Cytosolic
87	LG:414376.20:2001MAR30	543	565 forward 2	TM	Transmembrane
· 87	LG:414376.20:2001MAR30	566	579 forward 2	TM	Non-Cytosolic
87	LG:414376.20:2001MAR30	580	602 forward 2	TM	Transmembrane
87	LG:414376.20:2001MAR30	603	664 forward 2	TM	Cytosolic
87	LG:414376.20:2001MAR30	665	687 forward 2	TM	Transmembrane
87	LG:414376.20:2001MAR30	688	701 forward 2	TM	Non-Cytosolic
87	LG:414376.20:2001MAR30	702	720 forward 2	TM	Transmembrane
87	LG:414376.20:2001MAR30	721	726 forward 2	TM	Cytosolic
87	LG:414376.20:2001MAR30	727	749 forward 2	TM	Transmembrane
87	LG:414376.20:2001MAR30	750	2000 forward 2	TM	Non-Cytosolic
88	LG:457695.1:2001MAR30	1	257 forward 1	TM	Non-Cytosolic
88	LG:457695.1:2001MAR30	258	280 forward 1	TM	Transmembrane
88	LG:457695.1:2001MAR30	281	282 forward 1	TM	Cytosolic
89	LG:902390.2:2001MAR30	1	178 forward 1	TM	Cytosolic
89	LG:902390.2:2001MAR30	i	178 forward 3	TM	Cytosolic
90	LG:903565.20:2001MAR30	i	1239 forward 2	TM	Non-Cytosolic
90	LG:903565.20:2001MAR30	1240		TM	Transmembrane
90	LG:903565.20:2001MAR30		1278 forward 2	TM	Cytosolic
90	LG:903565.20:2001MAR30		1301 forward-2	TM	Transmembrane
	LG:903565.20:2001MAR30		1345 forward 2	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	. 1	819 forward 1	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	. 820	842 forward 1	TM	Transmembrane
91	LG:978182.4:2001MAR30	843	877 forward 1	TM	· Cytosolic
91	LG:978182.4:2001MAR30	878	896 forward 1	· TM	Transmembrane
91	LG:978182.4:2001MAR30	897	910 forward 1	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	911	933 forward 1	TM	Transmembrane
91	LG:978182.4:2001MAR30	934	971 forward 1	TM	Cytosolic
91	LG:978182.4:2001MAR30	972	994 forward 1	TM	Transmembrane
91	LG:978182.4:2001MAR30	995	1008 forward 1	TM .	Non-Cytosolic
91	LG:978182.4:2001MAR30	1009	1031 forward 1	TM	Transmembrane
91	LG:978182.4:2001MAR30		1410 forward 1	TM	Cytosolic
91	LG:978182.4:2001MAR30		1428 forward 1	TM	Transmembrane
91	LG:978182.4:2001MAR30		1429 forward 1	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	1	819 forward 2	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	820	842 forward 2	TM	Transmembrane
91	LG:978182.4:2001MAR30	843	848 forward 2	TM	Cytosolic
91	LG:978182.4:2001MAR30	849	871 forward 2	TM	Transmembrane
91	LG:978182.4:2001MAR30	872	899 forward 2	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	900	922 forward 2	TM	Transmembrane
91	LG:978182.4:2001MAR30	923	966 forward 2	TM	Cytosolic
91	LG:978182.4:2001MAR30	967	989 forward 2	TM	Transmembrane
91	LG:978182.4:2001MAR30	990	998 forward 2	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	999	1018 forward 2	TM	Transmembrane
91	LG:978182.4:2001MAR30		1202 forward 2	TM	Cytosolic
91	LG:978182.4:2001MAR30		1225 forward 2	TM	Transmembrane
91	LG:978182.4:2001MAR30		1429 forward 2	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	1220	904 forward 3	TM	Non-Cytosolic
71	LO. 7 / O 1021-1.200 1141/ 1100	ı	JOH TOTWOID 3	1141	. 10.1 Cy 1030IIC

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
91	LG:978182.4:2001MAR30	905	922	forward 3	TM	Transmembrane
91 .	LG:978182.4:2001MAR30	923	966	forward 3	TM	Cytosolic
91	LG:978182.4:2001MAR30	967	989	forward 3	TM	Transmembrane
91	LG:978182.4:2001MAR30	990	992	forward 3	TM	Non-Cytosolic
91	LG:978182.4:2001MAR30	993	1015	forward 3	TM	Transmembrane
91	LG:978182.4:2001MAR30	1016	1035	forward 3	TM	Cytosolic
91	LG:978182.4:2001MAR30	1036	1058	forward 3	TM	Transmembrane
91	LG:978182.4:2001MAR30	1059	1429	forward 3	TM	Non-Cytosolic
92	LG:986827.1:2001MAR30	1	363	forward 1	TM	Non-Cytosolic
92	LG:986827.1:2001MAR30	364	386	forward 1	TM	Transmembrane
92	LG:986827.1:2001MAR30	387	401	forward 1	TM	Cytosolic
93	LG:013792.1:2001MAR30	1	124	forward 1	TM	Cytosolic
93	LG:013792.1:2001MAR30	125	147	forward 1	TM	Transmembrane
93	LG:013792.1:2001MAR30	148	184	forward 1	TM	Non-Cytosolic
93	LG:013792.1:2001MAR30	185	207	forward 1	TM	Transmembrane
93	LG:013792.1:2001MAR30	208	265	forward 1	TM	Cytosolic
93	LG:013792.1:2001MAR30	266	288	forward 1	TM	Transmembrane
93	LG:013792.1:2001MAR30	289	539	forward 1	TM	Non-Cytosolic
94	LG:018258.1:2001MAR30	1	9	forward 2	TM	Non-Cytosolic
94	LG:018258.1:2001MAR30	10	28	forward 2	TM	Transmembrane
94	LG:018258.1:2001MAR30	29	218	forward 2	TM	Cytosolic
94	LG:018258.1:2001MAR30	219	. 241	forward 2	TM	Transmembrane
94	LG:018258.1:2001MAR30	242	244	forward 2	TM	Non-Cytosolic
95 [.]	LG:023126.3:2001MAR30	1	470	forward 1	TM	Non-Cytosolic
95	LG:023126.3:2001MAR30	471	493	forward 1	TM	Transmembrane
95	LG:023126.3:2001MAR30	494	530	forward 1	TM ·	Cytosolic ·
96	LG:023618.1:2001MAR30	1	12	forward 3	. TM	Cytosolic
96	LG:023618.1:2001MAR30	13	35	forward 3	TM	Transmembrane
- 96	LG:023618.1:2001MAR30	36	1625	forward 3	TM	Non-Cytosolic
96	LG:023618.1:2001MAR30	1626	1648	forward 3	TM	Transmembrane
96	LG:023618.1:2001MAR30	1649	1654	forward 3	TM	Cytosolic
96	LG:023618.1:2001MAR30	1655	1677	forward 3	TM	Transmembrane
96	LG:023618.1:2001MAR30	1678	2153	forward 3	TM	Non-Cytosolic
97	LG:030999.1:2001MAR30	1.	791	forward 3	TM	Non-Cytosolic
97	LG:030999.1:2001MAR30	792	814	forward 3	TM	Transmembrane
97	LG:030999.1:2001MAR30	815	882	forward 3	TM	Cytosolic
98	LG:103508.1:2001MAR30	1	324	forward 1	TM	Cytosolic
98	LG:103508.1:2001MAR30	325	347	forward 1	TM	Transmembrane
98	LG:103508.1:2001MAR30	348		forward 1	TM	Non-Cytosolic
98	LG:103508.1:2001MAR30	352		forward 1	TM	Transmembrane
98	LG:103508.1:2001MAR30	372		forward 1	TM	Cytosolic
99	LG:107976.15:2001MAR30	1		forward 1	,TM	Non-Cytosolic
99	LG:107976.15:2001MAR30	2508	2530	forward 1	TM	Transmembrane
99	LG:107976.15:2001MAR30	2531		forward 1	TM	Cytosolic
99	LG:107976.15:2001MAR30	1		forward 2	TM	Non-Cytosolic
99	LG:107976.15:2001MAR30			forward 2	TM	Transmembrane
99	LG:107976.15:2001MAR30			forward 2	TM	Cytosolic
99	LG:107976.15:2001MAR30			forward 2	TM	Transmembrane
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SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
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SEQ ID NO	: Template ID	Start Stop Frame	Domain	Topology
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	LG:1095833.9:2001MAR30	2304 2307 forward 2	TM	Transmembrane
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SEQ ID NO:	Template ID	Start Sta	•	Domain	Topology
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103	LG:1095833.9:2001MAR30	2922 294	40 forward 2	TM	Non-Cytosolic
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103	LG:1095833.9:2001MAR30	1713 173	35 forward 3	TM	Transmembrane
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Table 5

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SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
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105	LG:1386609.2:2001MAR30	1453	1475 forward 2	2 TM	Transmembrane
105	LG:1386609.2:2001MAR30	1476	1750 forward 2	2 TM	Non-Cytosolic
105	LG:1386609.2:2001MAR30	1751	1773 forward 2	2 TM	Transmembrane
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106	LG:1398465.1:2001MAR30	170	192 forward 1		Transmembrane
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106	LG:1398465.1:2001MAR30	658	675 forward 1	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
106	LG:1398465.1:2001MAR30	676	695 forward 1	TM	Cytosolic
106	LG:1398465.1:2001MAR30	696	718 forward 1	TM	Transmembrane
106	LG:1398465.1:2001MAR30	719	748 forward 1	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	749	771 forward 1	TM	Transmembrane
106	LG:1398465.1:2001MAR30	772	791 forward 1	TM	Cytosolic
106	LG:1398465.1:2001MAR30	792	814 forward 1	TM	Transmembrane
106	LG:1398465.1:2001MAR30	815	823 forward 1	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	824	846 forward 1	TM	Transmembrane
106	LG:1398465.1:2001MAR30	847	1087 forward 1	TM	Cytosolic
106	LG:1398465.1:2001MAR30	1088	1110 forward 1	TΜ	Transmembrane
106	LG:1398465.1:2001MAR30	1111	1113 forward 1	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	1114	1136 forward 1	TM	Transmembrane
106	LG:1398465.1:2001MAR30	1137	1152 forward 1	TM	Cytosolic
106	LG:1398465.1:2001MAR30	1	205 forward 2	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	206	228 forward 2	ΤM	Transmembrane
106	LG:1398465.1:2001MAR30	229	374 forward 2	TM	Cytosolic
106	LG:1398465.1:2001MAR30	375	397 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	398	443 forward 2	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	444	466 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	467	633 forward 2	TM	Cytosolic
106	LG:1398465.1:2001MAR30	634	656 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	657	696 forward 2	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	697	719 forward 2	TM	Transmembrane
106.	LG:1398465.1:2001MAR30	720	725 forward 2	· TM	Cytosolic
106	LG:1398465.1:2001MAR30	726	743 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	744	746 forward 2	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	747	769 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	770	808 forward 2	TM	Cytosolic
106	LG:1398465.1:2001MAR30	809	831 forward 2	. TM	Transmembrane
106	LG:1398465.1:2001MAR30	832	859 forward 2	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	860	882 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	883	954 forward 2	TM	Cytosolic
106	LG:1398465.1:2001MAR30	955	977 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	978	1060 forward 2	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	1061	1082 forward 2	TM	Transmembrane
106	LG:1398465.1:2001MAR30	1083	1152 forward 2	TM	Cytosolic
106	LG:1398465.1:2001MAR30	1	520 forward 3	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	521	543 forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	544	583 forward 3	TM	Cytosolic
106	LG:1398465.1:2001MAR30	584	606 forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	607	627 forward 3	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	628	650 forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	651	658 forward 3	TM	Cytosolic
106	LG:1398465.1:2001MAR30	659	681 forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	682	700 forward 3	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	701	718 forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	719	724 forward 3	TM	Cytosolic
106	LG:1398465.1:2001MAR30	725	747 forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	748	789 forward 3	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	790	812 forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
106	LG:1398465.1:2001MAR30	813	831	forward 3	TM	Cytosolic
106	LG:1398465.1:2001MAR30	832	851	forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	852	865	forward 3	TM	Non-Cytosolic
106	LG:1398465.1:2001MAR30	866	888	forward 3	TM	Transmembrane
106	LG:1398465.1:2001MAR30	889		forward 3	TM	Cytosolic
106	LG:1398465.1:2001MAR30			forward 3	` TM	Transmembrane
106	LG:1398465.1:2001MAR30			forward 3	TM	Non-Cytosolic
107	LG:1453417.10:2001MAR30	1		forward 2	TM	Non-Cytosolic
107	LG:1453417.10:2001MAR30	•		forward 2	TM	Transmembrane
107	LG:1453417.10:2001MAR30			forward 2	TM	Cytosolic
107	LG:1453417.10:2001MAR30			forward 2	TM	Transmembrane
107	LG:1453417.10:2001MAR30			forward 2	TM	Non-Cytosolic
107	LG:1453417.10:2001MAR30			forward 2	TM	Transmembrane
107	LG:1453417.10:2001MAR30			forward 2	TM	Cytosolic
107	LG:1453417.10:2001MAR30	-		forward 2	TM ·	Transmembrane
107	LG:1453417.10:2001MAR30			forward 2	TM	
107	LG:1453417.10:2001MAR30		_	forward 2	TM	Non-Cytosolic
107	LG:1453417.10:2001MAR30			forward 2		Transmembrane
					TM	Cytosolic
107	LG:1453417.10:2001MAR30			forward 2	TM	Transmembrane
107	LG:1453417.10:2001MAR30			forward 2	TM	Non-Cytosolic
108	LG:147869.3:2001MAR30	1		forward 1	TM	Non-Cytosolic
.108	LG:147869.3:2001MAR30	.89		forward 1	TM	Transmembrane
. 108 .	LG:147869.3:2001MAR30	107		forward 1	TM	Cytosolic
108	LG:147869.3:2001MAR30	115		forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	138		forward 1	TM	Non-Cytosolic
·108	LG:147869.3:2001MAR30	147	_	forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	170		forward 1	TM	Cytosolic
108	LG:147869.3:2001MAR30	190		forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	213		forward 1	. TM	Non-Cytosolic
108	LG:147869.3:2001MAR30	227		forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	250		forward 1	TM	Cytosolic
108	LG:147869.3:2001MAR30	316		forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	339		forward 1	TM	Non-Cytosolic
108	LG:147869.3:2001MAR30	514		forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	537		forward 1	TM	Cytosolic
108	LG:147869.3:2001MAR30	541		forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	564		forward 1	TM	Non-Cytosolic
108	LG:147869.3:2001MAR30	573		forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	596		forward 1	TM	Cytosolic
108	LG:147869.3:2001MAR30	608	630	forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	631	644	forward 1	TM	Non-Cytosolic
108	LG:147869.3:2001MAR30	645	667	forward 1	TM	Transmembrane
108	LG:147869.3:2001MAR30	668	713	forward 1	TM	Cytosolic
108	LG:147869.3:2001MAR30	1	564	forward 2	TM	Non-Cytosolic
108	LG:147869.3:2001MAR30	565	587	forward 2	TM	Transmembrane
108	LG:147869.3:2001MAR30	588	613	forward 2	TM	Cytosolic
108	LG:147869.3:2001MAR30	614	636	forward 2	TM	Transmembrane
108	LG:147869.3:2001MAR30	637	645	forward 2	TM	Non-Cytosolic
108	LG:147869.3:2001MAR30	646	665	forward 2	TM	Transmembrane
108	LG:147869.3:2001MAR30	666	685	forward 2	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
108	LG:147869.3:2001MAR30	686	708 forward 2	ŤМ	Transmembrane
108	LG:147869.3:2001MAR30	709	713 forward 2	TM	Non-Cytosolic
109	LG:148485.5:2001MAR30	1	18 forward 1	TM	Cytosolic
109	LG:148485.5:2001MAR30	19	36 forward 1	TM	Transmembrane
109	LG:148485.5:2001MAR30	37	50 forward 1	TM	Non-Cytosolic
109	LG:148485.5:2001MAR30	51	73 forward 1	TM	Transmembrane
109	LG:148485.5:2001MAR30	74	189 forward 1	TM	Cytosolic
109	LG:148485.5:2001MAR30	190	212 forward 1	TM	Transmembrane
109	LG:148485.5:2001MAR30	213	288 forward 1	TM	Non-Cytosolic
109	LG:148485.5:2001MAR30	289	311 forward 1	TM	Transmembrane
109	LG:148485.5:2001MAR30	312	315 forward 1	TM	Cytosolic
110	LG:1501818.12:2001MAR30	1	177 forward 1	TM	Cytosolic
110	LG:1501818.12:2001MAR30	178	200 forward 1	TM	Transmembrane
110	LG:1501818.12:2001MAR30	201	571 forward 1	TM	Non-Cytosolic
110	LG:1501818.12:2001MAR30	ì	446 forward 2	TM	Non-Cytosolic
110	LG:1501818.12:2001MAR30	447	469 forward 2	TM	Transmembrane
110	LG:1501818.12:2001MAR30	470	481 forward 2	TM	Cytosolic
110	LG:1501818.12:2001MAR30	482	501 forward 2	TM	Transmembrane
110	LG:1501818.12:2001MAR30	502	510 forward 2	TM	Non-Cytosolic
110	LG:1501818.12:2001MAR30	511	533 forward 2	TM	Transmembrane
110	LG:1501818.12:2001MAR30	534	570 forward 2	TM	Cytosolic
111	LG:1508275.1:2001MAR30	1	106 forward 1	TM	Cytosolic
112 ·	LG:1509771.1:2001MAR30	1 /	134 forward 2	TM	Cytosolic
112	LG:1509771.1:2001MAR30	135	157 forward 2	TM	Transmembrane
112	LG:1509771.1:2001MAR30	158	159. forward 2	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	1	597 forward 1	TM	Non-Cytosolic
113 ⁻	LG:1512998.13:2001MAR30	598	620 forward 1	TM	Transmembrane
113	LG:1512998.13:2001MAR30	621	777 forward 1	TM	Cytosolic
113	LG:1512998.13:2001MAR30	778	800 forward 1	TM	Transmembrane
113	LG:1512998.13:2001MAR30	801	814 forward 1	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	815	837 forward 1	TM	Transmembrane
113	LG:1512998.13:2001MAR30	838	935 forward 1	TM	Cytosolic
113	LG:1512998.13:2001MAR30	936	953 forward 1	TM	Transmembrane
113	LG:1512998.13:2001MAR30	954	1009 forward 1	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	1010	1029 forward 1	TM	Transmembrane
113	LG:1512998.13:2001MAR30	1030	1049 forward 1	TM	Cytosolic
113	LG:1512998.13:2001MAR30	1050	1069 forward 1	TM	Transmembrane
113	LG:1512998.13:2001MAR30	1070	1083 forward 1	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	1084	1106 forward 1	TM	Transmembrane
113	LG:1512998.13:2001MAR30	1107	1228 forward 1	· TM	Cytosolic
113	LG:1512998.13:2001MAR30	1	470 forward 2	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	471	493 forward 2	TM	Transmembrane
113	LG:1512998.13:2001MAR30	494	523 forward 2	TM	Cytosolic
113	LG:1512998.13:2001MAR30	524	546 forward 2	TM	Transmembrane
113	LG:1512998.13:2001MAR30	547	596 forward 2	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	597	619 forward 2	TM	Transmembrane
113	LG:1512998.13:2001MAR30	620	804 forward 2	TM	Cytosolic
113	LG:1512998.13:2001MAR30	805	827 forward 2	TM	Transmembrane
113	LG:1512998.13:2001MAR30	828	934 forward 2	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	935	954 forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
113	LG:1512998.13:2001MAR30	955	1016 forward 2	TM	Cytosolic
113	LG:1512998.13:2001MAR30	1017	1039 forward 2	TM	Transmembrane
113	LG:1512998.13:2001MAR30	1040	1228 forward 2	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	1	865 forward 3	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	866	888 forward 3	TM	Transmembrane
113	LG:1512998.13:2001MAR30	889	964 forward 3	TM	Cytosolic
113	LG:1512998.13:2001MAR30	965	987 forward 3	TM	Transmembrane
113	LG:1512998.13:2001MAR30	988	1001 forward 3	TM	Non-Cytosolic
113	LG:1512998.13:2001MAR30	1002	1024 forward 3	TM	Transmembrane
113	LG:1512998.13:2001MAR30	1025	1044 forward 3	TM	Cytosolic
113	LG:1512998.13:2001MAR30	1045	1067 forward 3	TM	Transmembrane
113	LG:1512998.13:2001MAR30	1068	1227 forward 3	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	1	607 forward 1	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	608	630 forward 1	TM	Transmembrane
114	LG:198251.7:2001MAR30	631	689 forward 1	TM	Cytosolic
114	LG:198251.7:2001MAR30	690	709 forward 1	TM	Transmembrane
114	LG:198251.7:2001MAR30	710	768 forward 1	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	769	791 forward 1	TM	Transmembrane
114	LG:198251.7:2001MAR30	792	896 forward 1	TM	Cytosolic
114	LG:198251.7:2001MAR30	897	919 forward 1	TM	Transmembrane
114	LG:198251.7:2001MAR30	920	1107 forward 1	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	1108	1130 forward 1	TM	Transmembrane
114	LG:198251.7:2001MAR30	1131	1186 forward 1	TM	Cytosolic
114	LG:198251.7:2001MAR30	1	595 forward 2	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	596	618 forward 2	TM	Transmembrane
114	LG:198251.7:2001MAR30	619	637 forward 2	TM	Cytosolic
114	LG:198251.7:2001MAR30	638	655 forward 2	TM	Transmembrane
114	LG:198251.7:2001MAR30	656	685 forward 2	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	686	708 forward 2	TM	Transmembrane
114	LG:198251.7:2001MAR30	709	1096 forward 2	TM	Cytosolic
114	LG:198251.7:2001MAR30		1119 forward 2	TM	Transmembrane
114	LG:198251.7:2001MAR30		1185 forward 2	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	1	877 forward 3	TM	Non-Cytosolic
114	LG:198251.7:2001MAR30	878	900 forward 3	TM	Transmembrane
114	LG:198251.7:2001MAR30	901	919 forward 3	TM	Cytosolic
114	LG:198251.7:2001MAR30	920	937 forward 3	TM	Transmembrane
114	LG:198251.7:2001MAR30	938	1185 forward 3	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	1	896 forward 1	· TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	897	914 forward 1	TM	Transmembrane
115	LG:198296.1:2001MAR30	915	920 forward 1	TM	Cytosolic
115	LG:198296.1:2001MAR30	921	943 forward 1	TM	Transmembrane
115	LG:198296.1:2001MAR30	944	1036 forward 1	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	1037	1059 forward 1	TM	Transmembrane
115	LG:198296.1:2001MAR30	1060	1127 forward 1	TM	Cytosolic
115	LG:198296.1:2001MAR30		1150 forward 1	TM	Transmembrane
115	LG:198296.1:2001MAR30		1188 forward 1	TM	Non-Cytosolic
. 115	LG:198296.1:2001MAR30	1	20 forward 2	TM	Cytosolic
115	LG:198296.1:2001MAR30	21	43 forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30	44	530 forward 2	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	531	553 forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
115	LG:198296.1:2001MAR30	554	573	forward 2	TM	Cytosolic
115	LG:198296.1:2001MAR30	574	596	forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30	597	605	forward 2	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	606	628	forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30	629	766	forward 2	TM	Cytosolic
115	LG:198296.1:2001MAR30	767	789	forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30	790	813	forward 2	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	814		forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30	837	1054	forward 2	TM	Cytosolic
115	LG:198296.1:2001MAR30			forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30	1078	1091	forward 2	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	1092	1114	forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30			forward 2	TM	Cytosolic
115	LG:198296.1:2001MAR30			forward 2	TM	Transmembrane
115	LG:198296.1:2001MAR30			forward 2	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	1		forward 3	TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	459		forward 3	TM	Transmembrane
115	LG:198296.1:2001MAR30	482		forward 3	TM	Cytosolic
115	LG:198296.1:2001MAR30	525		forward 3	TM	Transmembrane
115	LG:198296.1:2001MAR30	548	921		TM	Non-Cytosolic
115	LG:198296.1:2001MAR30	922	944	forward 3	TM	Transmembrane
115	LG:198296.1:2001MAR30	945	1137	forward 3	TM	Cytosolic
115	LG:198296.1:2001MAR30	1138	1160	forward 3	TM	Transmembrane
115	LG:198296.1:2001MAR30.	1161	1187	forward 3	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	1	535	forward 1'.	TM	Cytosolic
116	LG:198876.13:2001MAR30	536		forward 1.	TM	Transmembrane
116	LG:198876.13:2001MAR30	559	1162	forward 1	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	1163	1185	forward 1	TM	Transmembrane
116	LG:198876.13:2001MAR30	1186	1191	forward 1	TM	Cytosolic
116	LG:198876.13:2001MAR30	1192	1214	forward 1	TM	Transmembrane
116	LG:198876.13:2001MAR30	1215	1405	forward 1	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	1	539	forward 2	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	540	562	forward 2	TM	Transmembrane
116	LG:198876.13:2001MAR30	563	732	forward 2	TM	Cytosolic
116	LG:198876.13:2001MAR30	733	755	forward 2	TM	Transmembrane
116	LG:198876.13:2001MAR30	756	778	forward 2	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	779	801	forward 2	TM	Transmembrane
116	LG:198876.13:2001MAR30	802	1160	forward 2	TM	Cytosolic
116	LG:198876.13:2001MAR30	1161	1183	forward 2	TM	Transmembrane
116	LG:198876.13:2001MAR30	1184	1202	forward 2	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	1203	1222	forward 2	TM	Transmembrane
116	LG:198876.13:2001MAR30	1223	1380	forward 2	TM	Cytosolic
116	LG:198876.13:2001MAR30	1381	1398	forward 2	TM	Transmembrane
116	LG:198876.13:2001MAR30	1399	1404	forward 2	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	1	12	forward 3	TM	Cytosolic
116	LG:198876.13:2001MAR30	13	35	forward 3	TM	Transmembrane
116	LG:198876.13:2001MAR30	36	68	forward 3	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	69	91	forward 3	TM	Transmembrane
116	LG:198876.13:2001MAR30	92	537	forward 3	TM	Cytosolic
116	LG:198876.13:2001MAR30	538	560	forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
116	LG:198876.13:2001MAR30	561	726 forward 3	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	727	749 forward 3	TM	Transmembrane
116	LG:198876.13:2001MAR30	750	1190 forward 3	TM	Cytosolic
116	LG:198876.13:2001MAR30	1191	1210 forward 3	TM	Transmembrane
116	LG:198876.13:2001MAR30	1211	1224 forward 3	TM	Non-Cytosolic
116	LG:198876.13:2001MAR30	1225	1247 forward 3	TM	Transmembrane
116	LG:198876.13:2001MAR30	1248	1404 forward 3	TM	Cytosolic
117	LG:200704.1:2001MAR30	ן	425 forward 1	TM	Non-Cytosolic
117	LG:200704.1:2001MAR30	426	448 forward 1	TM	Transmembrane
117	LG:200704.1:2001MAR30	449	559 forward 1	TM	Cytosolic
117	LG:200704.1:2001MAR30	560	582 forward 1	TM	Transmembrane
117	LG:200704.1;2001MAR30	583	626 forward 1	TM	Non-Cytosolic
117	LG:200704.1:2001MAR30	627	646 forward 1	TM	Transmembrane
117	LG:200704.1:2001MAR30	647	733 forward 1	TM	Cytosolic
118	LG:206593.3:2001MAR30	1	464 forward 2	TM	Non-Cytosolic
118	LG:206593.3:2001MAR30	465	484 forward 2	TM	Transmembrane
118	LG:206593.3:2001MAR30	485	516 forward 2	TM	Cytosolic
119	LG:223970.11:2001MAR30	1	90 forward 1	TM	Cytosolic
119	LG:223970.11:2001MAR30	91	113 forward 1	TM	Transmembrane
119	LG:223970.11:2001MAR30	114	1376 forward 1	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30		1399 forward 1	TM	Transmembrane
119	LG:223970.11:2001MAR30		1461 forward 1	· TM	Cytosolic
119 .	LG:223970.11:2001MAR30		1484 forward 1	TM	Transmembrane
119	LG:223970.11:2001MAR30		1509 forward 1	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30		1532 forward 1	. TM	Transmembrane
119	LG:223970.11:2001MAR30		1687 forward 1:	TM	Cytosolic
119	LG:223970.11:2001MAR30		1710 forward 1	. TM	Transmembrane
119	LG:223970.11:2001MAR30		1724 forward 1	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30		1747 forward 1	. TM	Transmembrane
119	LG:223970.11:2001MAR30		2013 forward 1	TM	Cytosolic
119	LG:223970.11:2001MAR30		2036 forward 1	TM	Transmembrane
119	LG:223970.11:2001MAR30		2341 forward 1	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	1	868 forward 2	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	869	891 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30	892	903 forward 2	TM	Cytosolic
119	LG:223970.11:2001MAR30	904	923 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30	924	927 forward 2	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	928	950 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30	951	1265 forward 2	TM	Cytosolic
119	LG:223970.11:2001MAR30		1288 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30		1302 forward 2	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30		1325 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30		1401 forward 2	TM	Cytosolic
119	LG:223970.11:2001MAR30		1424 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30		1443 forward 2	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30		1466 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30		1498 forward 2	TM	Cytosolic
119	LG:223970.11:2001MAR30		1516 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30		1528 forward 2	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30		1551 forward 2	TM	Transmembrane
117		1027	1001 IOIWUIU Z	1141	

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
119	LG:223970.11:2001MAR30	1552	1677 forward 2	TM	Cytosolic
119	LG:223970.11:2001MAR30	1678	1700 forward 2	TM	Transmembrane
119	LG:223970.11:2001MAR30	1701	2341 forward 2	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	1	622 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	623	645 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	646	705 forward 3	TM	Cytosolic
119	LG:223970.11:2001MAR30	706	728 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	729	870 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	871	893 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	894	899 forward 3	TM	Cytosolic
119	LG:223970.11:2001MAR30	900	922 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	923	927 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	928	950 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	951	962 forward 3	TM	Cytosolic
119	LG:223970.11:2001MAR30	963	985 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	986	1024 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	1025	1047 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	1048	1250 forward 3	TM	Cytosolic
119	LG:223970.11:2001MAR30	1251	1273 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	1274	1303 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	1304	1326 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	1327	1330 forward 3	TM.	Cytosolic
119 .	LG:223970.11:2001MAR30	1331	1353 forward 3	: TM	Transmembrane
119	LG:223970.11:2001MAR30	1354	1460 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	1461	1483 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	1484	1495 forward 3	· · ·TM	Cytosolic
119	LG:223970.11:2001MAR30	1496	1518 forward 3.	TM	Transmembrane
119	LG:223970.11:2001MAR30	1519	1522 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	1523	1545 forward 3	. TM	Transmembrane
119	LG:223970.11:2001MAR30	1546	1568 forward 3	TM	Cytosolic ·
119	LG:223970.11:2001MAR30	1569	1591 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	1592	2022 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	2023	2045 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	2046	2227 forward 3	TM	Cytosolic
119	LG:223970.11:2001MAR30	2228	2250 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	2251	2299 forward 3	TM	Non-Cytosolic
119	LG:223970.11:2001MAR30	2300	2322 forward 3	TM	Transmembrane
119	LG:223970.11:2001MAR30	2323	2341 forward 3	TM	Cytosolic
120	LG:227500.5:2001MAR30	1	855 forward 1	TM	Non-Cytosolic
120	LG:227500.5:2001MAR30	856	875 forward 1	TM	Transmembrane
120	LG:227500.5:2001MAR30	876	1071 forward 1	TM	Cytosolic
120	LG:227500.5:2001MAR30	1072	1094 forward 1	TM	Transmembrane
120	LG:227500.5:2001MAR30	1095	1120 forward 1	TM	Non-Cytosolic
120	LG:227500.5:2001MAR30	1121	1138 forward 1	TM	Transmembrane
120	LG:227500.5:2001MAR30	1139	1152 forward 1	TM	Cytosolic
121	LG:227722.7:2001MAR30	1	249 forward 1	TM	Cytosolic
121	LG:227722.7:2001MAR30	250	272 forward 1	TM	Transmembrane
121	LG:227722.7:2001MAR30	273	628 forward 1	TM	Non-Cytosolic
122	LG:229105.1:2001MAR30	1	184 forward 3	TM	Cytosolic
122	LG:229105.1:2001MAR30	185	207 forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
122	LG:229105.1:2001MAR30	208	233	forward 3	TM	Non-Cytosolic
122	LG:229105.1:2001MAR30	234	256	forward 3	TM	Transmembrane
122	LG:229105.1:2001MAR30	257	287	forward 3	TM	Cytosolic
122	LG:229105.1:2001MAR30	288	310	forward 3	TM	Transmembrane
122	LG:229105.1:2001MAR30	311	802	forward 3	TM	Non-Cytosolic
123	LG:233761.4:2001MAR30	1	849	forward 1	TM	Non-Cytosolic
123	LG:233761.4:2001MAR30	850	872	forward 1	TM	Transmembrane
123	LG:233761.4:2001MAR30	873	892	forward 1	TM	Cytosolic
123	LG:233761.4:2001MAR30	893	912	forward 1	TM	Transmembrane
123	LG:233761.4:2001MAR30	913	957	forward 1	TM	Non-Cytosolic
123	LG:233761.4:2001MAR30	1	854	forward 2	TM	Non-Cytosolic
123	LG:233761.4:2001MAR30	855	877	forward 2	TM	Transmembrane
123	LG:233761.4:2001MAR30	878	957	forward 2	TM	Cytosolic
123	LG:233761.4:2001MAR30	1	753	forward 3	TM	Non-Cytosolic
123	LG:233761.4:2001MAR30	754	776	forward 3	TM	Transmembrane
123	LG:233761.4:2001MAR30	777	855	forward 3	TM	Cytosolic
123	LG:233761.4:2001MAR30	856	875	forward 3	TM	Transmembrane
123	LG:233761.4:2001MAR30	876	889	forward 3	TM	Non-Cytosolic
123	LG:233761.4:2001MAR30	890	912	forward 3	TM	Transmembrane
123	LG:233761.4:2001MAR30	913	957	forward 3	TM	Cytosolic
124	LG:234326.67:2001MAR30	1 1	1073	forward 2	TM	Non-Cytosolic
124	LG:234326.67:2001MAR30	1074	1096	forward 2	TM .	. Transmembrane
124	LG:234326.67:2001MAR30:	1097	1173	forward 2	TM	Cytosolic
124	LG:234326.67:2001MAR30	.1174.	1196	forward 2	TM	Transmembrane
1 24 .	LG:234326.67:2001MAR30	1197	1378	forward 2	.TM	Non-Cytosolic
124	LG:234326.67:2001MAR30	1379	1401	forward 2	TM	Transmembrane
124	LG:234326.67:2001MAR30	1402	1565	forward 2	TM	 Cytosolic
124	LG:234326.67:2001MAR30	1	1133	forward 3	TM	Non-Cytosolic
124	LG:234326.67:2001MAR30	1134	1151	forward 3	TM	Transmembrane
124	LG:234326.67:2001MAR30	1152	1157	forward 3	TM	Cytosolic
124	LG:234326.67:2001MAR30	1158	1180	forward 3	TM	Transmembrane
124	LG:234326.67:2001MAR30	1181	1183	forward 3	TM	Non-Cytosolic
124	LG:234326.67:2001MAR30	1184	1206	forward 3	TM	Transmembrane
124	LG:234326.67:2001MAR30	1207	1249	forward 3	TM	Cytosolic
124	LG:234326.67:2001MAR30			forward 3	TM	Transmembrane
124	LG:234326.67:2001MAR30			forward 3	TM	Non-Cytosolic
124	LG:234326.67:2001MAR30			forward 3	TM	Transmembrane
124	LG:234326.67:2001MAR30			forward 3	TM	Cytosolic
124	LG:234326.67:2001MAR30			forward 3	TM	Transmembrane
124	LG:234326.67:2001MAR30			forward 3	TM ·	Non-Cytosolic
124	LG:234326.67:2001MAR30			forward 3	TM	Transmembrane
124	LG:234326.67:2001MAR30			forward 3	TM	Cytosolic
125	LG:236056.27:2001MAR30	1		forward 1	TM	Non-Cytosolic
125	LG:236056.27:2001MAR30	728		forward 1	TM	Transmembrane
125	LG:236056.27:2001MAR30	751		forward 1	TM	Cytosolic
125	LG:236056.27:2001MAR30	823		forward 1	TM	Transmembrane
125	LG:236056.27:2001MAR30	846		forward 1	TM	Non-Cytosolic
125	LG:236056.27:2001MAR30	1		forward 3	TM	Non-Cytosolic
125	LG:236056.27:2001MAR30	627		forward 3	TM	Transmembrane
125	LG:236056.27:2001MAR30	650	719	forward 3	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
125	LG:236056.27:2001MAR30	720	742	forward 3	TM	Transmembrane
125	LG:236056.27:2001MAR30	743	746	forward 3	TM	Non-Cytosolic
125	LG:236056.27:2001MAR30	747	769	forward 3	TM	Transmembrane
125	LG:236056.27:2001MAR30	770	859	forward 3	TM	Cytosolic
126	LG:253889.31:2001MAR30	1	621	forward 1	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	622	644	forward 1	TM	Transmembrane
126	LG:253889.31:2001MAR30	645	871	forward 1	TM	Cytosolic
126	LG:253889.31:2001MAR30	872	894	forward 1	TM	Transmembrane
126	LG:253889.31:2001MAR30	895	903	forward 1	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	904	926	forward 1	TM	Transmembrane
126	LG:253889.31:2001MAR30	927		forward 1	TM	Cytosolic
126	LG:253889.31:2001MAR30	947	969	forward 1	TM	Transmembrane
126	LG:253889.31:2001MAR30	970		forward 1	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	1		forward 2	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	575	597	forward 2	TM	Transmembrane
126	LG:253889.31:2001MAR30	598		forward 2	TM	Cytosolic
126	LG:253889.31:2001MAR30	866	888	forward 2	TM	Transmembrane
126	LG:253889.31:2001MAR30	889		forward 2	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	947		forward 2	TM	Transmembrane
126	LG:253889.31:2001MAR30	970		forward 2	TM	Cytosolic
126	LG:253889.31:2001MAR30			forward 2	TM	Transmembrane
126	LG:253889.31:2001MAR30			forward 2	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30			forward 2	TM	Transmembrane
126	LG:253889.31:2001MAR30			forward.2	TM	Cytosolic
126	LG:253889.31:2001MAR30			forward 2	TM	Transmembrane
126	LG:253889.31:2001MAR30			forward 2	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	1		forward 3	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	358		forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	381		forward 3	. TM	Cytosolic
126	LG:253889.31:2001MAR30	402	424	forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	425	574	forward 3	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	575	597	forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	598	617	forward 3	TM	Cytosolic
126	LG:253889.31:2001MAR30	618	640	forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	641	867	forward 3	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	868	890	forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	891	1089	forward 3	TM	Cytosolic
126	LG:253889.31:2001MAR30	1090	1112	forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	1113	1126	forward 3	TM	Non-Cytosolic
126	LG:253889.31:2001MAR30	1127	1149	forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	1150	1150	forward 3	TM	Cytosolic
126	LG:253889.31:2001MAR30	1151	1173	forward 3	TM	Transmembrane
126	LG:253889.31:2001MAR30	1174	1284	forward 3	TM	Non-Cytosolic
127	LG:270833.135:2001MAR30	1	341	forward 1	TM	Non-Cytosolic
127	LG:270833.135:2001MAR30	342	364	forward 1	TM	Transmembrane
127	LG:270833.135:2001MAR30	365	444	forward 1	TM	Cytosolic
128	LG:292613.7:2001MAR30	1	4	forward 1	TM	Non-Cytosolic
128	LG:292613.7:2001MAR30	5	27	forward 1	TM	Transmembrane
128	LG:292613.7:2001MAR30	28	78	forward 1	TM	Cytosolic
128	LG:292613.7:2001MAR30	79	101	forward 1	TM	Transmembrane

128 LG:292613.7:2001MAR30 102 1272 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1273 1295 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1296 1391 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1415 1423 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1415 1423 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1424 l446 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1447 l514 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1515 l534 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1535 l710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 13 35 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 101 l12 forward 2
128 LG:292613.7:2001MAR30 1273 1295 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1296 1391 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1392 1414 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1415 1423 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1424 1446 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1447 1514 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1515 1534 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 1 1 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 3 7 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Transmembrane
128 LG:292613.7:2001MAR30 1392 1414 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1415 1423 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1424 1446 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1447 1514 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1515 1534 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 13 35 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Transmembrane 128 LG:2
128 LG:292613.7:2001MAR30 1392 1414 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1415 1423 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1424 1446 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1447 1514 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1515 1534 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 13 35 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Transmembrane 128 LG:2
128 LG:292613.7:2001MAR30 1415 1423 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1424 1446 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1447 1514 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1515 1534 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 13 35 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 13 1586 forward 2 TM Transmembrane 128 LG:292
128 LG:292613.7:2001MAR30 1424 1446 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1447 1514 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1515 1534 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 13 35 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 13 135 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30
128 LG:292613.7:2001MAR30 1447 1514 forward 1 TM Cytosolic 128 LG:292613.7:2001MAR30 1515 1534 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 35 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 113 135 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic
128 LG:292613.7:2001MAR30 1515 1534 forward 1 TM Transmembrane 128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2
128 LG:292613.7:2001MAR30 1535 1710 forward 1 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 13 35 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 113 135 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 1 forward 3 TM Cytosolic<
128 LG:292613.7:2001MAR30 1 12 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 13 35 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 113 135 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM
128 LG:292613.7:2001MAR30 13 35 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 113 135 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 1 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 2 24 forward 3
128 LG:292613.7:2001MAR30 36 77 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 78 100 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 113 135 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1629 1651 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 25 27 forward 3 TM Transmembrane 128 LG:2926
128 LG:292613.7:2001MAR30 78 100 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 113 135 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1629 1651 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 1 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 25 27 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001M
128 LG:292613.7:2001MAR30 101 112 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 113 135 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1629 1651 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 1 1 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Transmembrane 128 <
128 LG:292613.7:2001MAR30 113 135 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1629 1651 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1652 1710 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 25 27 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 136 1586 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1587 1609 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1610 1628 forward 2 TM Cytosolic 128 LG:292613.7:2001MAR30 1629 1651 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 1 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 25 27 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Transmembrane
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128 LG:292613.7:2001MAR30 1629 1651 forward 2 TM Transmembrane 128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 1 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 25 27 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 50 73 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1652 1710 forward 2 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 1 1 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 25 27 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 56 73 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1 1 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 2 24 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 25 27 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 56 73 forward 3 TM Transmembrane
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128 LG:292613.7:2001MAR30 25 27 forward 3 TM Non-Cytosolic 128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 56 73 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 28 49 forward 3 TM Transmembrane 128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 56 73 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 50 55 forward 3 TM Cytosolic 128 LG:292613.7:2001MAR30 56 73 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 56 73 forward 3 TM Transmembrane
120. LG12720131120011VIARJU 14 02 IUIWQIQ J IIVI IVON-CY.TOSOIIC
128 LG:292613.7:2001MAR30 83 105 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 106 125 forward 3 TM Cytosolic
128 LG:292613.7:2001MAR30 126 148 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 149 1124 forward 3 TM Non-Cytosolic
128 LG:292613.7:2001MAR30 1125 1147 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1148 1167 forward 3 TM Cytosolic
128 LG:292613.7:2001MAR30 1168 1190 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1191 1235 forward 3 TM Non-Cytosolic
128 LG:292613.7:2001MAR30 1236 1258 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1259 1400 forward 3 TM Cytosolic
128 LG:292613.7:2001MAR30 1401 1423 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1424 1467 forward 3 TM Non-Cytosolic
128 LG:292613.7:2001MAR30 1468 1490 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1491 1629 forward 3 TM Cytosolic
128 LG:292613.7:2001MAR30 1630 1652 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1653 1671 forward 3 TM Non-Cytosolic
128 LG:292613.7:2001MAR30 1672 1694 forward 3 TM Transmembrane
128 LG:292613.7:2001MAR30 1695 1709 forward 3 TM Cytosolic
129 LG:331546.2:2001MAR30 1 1061 forward 1 TM Non-Cytosolic
129 LG:331546.2:2001MAR30 1062 1079 forward 1 TM Transmembrane
129 LG:331546.2:2001MAR30 1080 1150 forward 1 TM Cytosolic
130 LG:332027.6:2001MAR30 1 12 forward 1 TM Cytosolic
130 LG:332027.6:2001MAR30 13 35 forward 1 TM Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
130	LG:332027.6:2001MAR30	36	112 forward 1	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	113	135 forward 1	TM	Transmembrane
130	LG:332027.6:2001MAR30	136	147 forward 1	TM	Cytosolic
130	LG:332027.6:2001MAR30	148	170 forward 1	TM	Transmembrane
130	LG:332027.6:2001MAR30	171	700 forward 1	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	701	723 forward 1	TM	Transmembrane
130	LG:332027.6:2001MAR30	724	743 forward 1	TM	Cytosolic
130	LG:332027.6:2001MAR30	· 744	766 forward 1	TM	Transmembrane
130	LG:332027.6:2001MAR30	767	785 forward 1	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	786	808 forward 1	TM	Transmembrane
130	LG:332027.6:2001MAR30	809	995 forward 1	TM	Cytosolic
130	LG:332027.6:2001MAR30	996	1018 forward 1	TM	Transmembrane
130	LG:332027.6:2001MAR30	1019		TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	1099		TM	Transmembrane
130	LG:332027.6:2001MAR30		· · · · · · · · · · · · · · · · · · ·	TM	Cytosolic
130	LG:332027.6:2001MAR30	1	22 forward 2	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	23	45 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30	46	81 forward 2	TM	Cytosolic
130	LG:332027.6:2001MAR30	82	104 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30	105	113 forward 2	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	114	136 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30	137	147 forward 2	TM	Cytosolic
130	LG:332027.6:2001MAR30	148	170 forward 2	. TM	Transmembrane
130	LG:332027.6:2001MAR30	171	579 forward 2	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	580	602 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30	603	683 forward 2	TM	Cytosolic
130	LG:332027.6:2001MAR30	684	706 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30	707	754 forward 2	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	755	774 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30	775	989 forward 2	TM	Cytosolic
130	LG:332027.6:2001MAR30	990	1012 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30	1013	1048 forward 2	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	1049	1071 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30		1091 forward 2	TM	Cytosolic
130	LG:332027.6:2001MAR30		1114 forward 2	TM	Transmembrane
130	LG:332027.6:2001MAR30		1151 forward 2	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	1	49 forward 3	TM	Cytosolic
130	LG:332027.6:2001MAR30	50	72 forward 3	TM	Transmembrane
130	LG:332027.6:2001MAR30	73	880 forward 3	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	881	903 forward 3	TM	Transmembrane
130	LG:332027.6:2001MAR30	904	930 forward 3	TM	Cytosolic
130	LG:332027.6:2001MAR30	931	953 forward 3	TM	Transmembrane
130	LG:332027.6:2001MAR30	954	1002 forward 3	TM	Non-Cytosolic
130	LG:332027.6:2001MAR30	1003	1025 forward 3	TM	Transmembrane
130	LG:332027.6:2001MAR30		1078 forward 3	TM	Cytosolic
130	LG:332027.6:2001MAR30		1101 forward 3	TM	Transmembrane
130	LG:332027.6:2001MAR30		1151 forward 3	TM -	Non-Cytosolic
- 131	LG:336998.1:2001MAR30	1	714 forward 1	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30	715	737 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30	738	831 forward 1	TM	Cytosolic
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SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
131	LG:336998.1:2001MAR30	832	851 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30	852	865 forward 1	ŤΜ	Non-Cytosolic
131	LG:336998.1:2001MAR30	866	885 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30	886	1099 forward 1	TM	Cytosolic
131	LG:336998.1:2001MAR30		1122 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		1363 forward 1	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		1386 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		1542 forward 1	TM	Cytosolic
131	LG:336998.1:2001MAR30		1565 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		1579 forward 1	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		1602 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		1804 forward 1	TM	Cytosolic
131	LG:336998.1:2001MAR30		1827 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		5189 forward 1	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		5212 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		5250 forward 1	TM	Cytosolic
131	LG:336998.1:2001MAR30		5273 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		5282 forward 1	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		5305 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		5311 forward 1	TM	Cytosolic
131	LG:336998.1:2001MAR30		5334 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		5348 forward 1	· TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		5371 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		5444 forward 1	TM	Cytosolic
131	LG:336998.1:2001MAR30		5467 forward 1	TM	Transmembrane
131	LG:336998.1:2001MAR30		5700 forward 1	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30	. 1	12 forward 2	· TM	Cytosolic
131	LG:336998.1:2001MAR30	13	35 forward 2	TM	Transmembrane
131	LG:336998.1:2001MAR30	36	5699 forward 2	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30	1	4342 forward 3	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30	•	4365 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		4389 forward 3	TM	Cytosolic
131	LG:336998.1:2001MAR30		4412 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		4436 forward 3	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		4459 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		4724 forward 3	TM	Cytosolic
131	LG:336998.1:2001MAR30		4747 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		5260 forward 3	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		5283 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		5310 forward 3	TM	Cytosolic
131	LG:336998.1:2001MAR30		5333 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		5352 forward 3	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		5370 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		5432 forward 3	TM	Cytosolic
131	LG:336998.1:2001MAR30		5455 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		5499 forward 3	TM	Non-Cytosolic
131	LG:336998.1:2001MAR30		5522 forward 3	TM	Transmembrane
131	LG:336998.1:2001MAR30		5699 forward 3	TM	Cytosolic
132	LG:338010.8:2001MAR30	1	102 forward 2	TM	Cytosolic
132	LG:338010.8:2001MAR30	103	125 forward 2	TM	Transmembrane
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SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
132	LG:338010.8:2001MAR30	126	139 forward 2	TM	Non-Cytosolic
132	LG:338010.8:2001MAR30	140	162 forward 2	TM	Transmembrane
132	LG:338010.8:2001MAR30	163	236 forward 2	TM	Cytosolic
132	LG:338010.8:2001MAR30	237	259 forward 2	TM	Transmembrane
132	LG:338010.8:2001MAR30	260	273 forward 2	TM	Non-Cytosolic
132	LG:338010.8:2001MAR30	274	296 forward 2	TM	Transmembrane
132	LG:338010.8:2001MAR30	297	398 forward 2	TM	Cytosolic
132	LG:338010.8:2001MAR30	1	103 forward 3	TM	Cytosolic
132	LG:338010.8:2001MAR30	104	126 forward 3	TM	Transmembrane
132	LG:338010.8:2001MAR30	127	202 forward 3	TM	Non-Cytosolic
132	LG:338010.8:2001MAR30	203	225 forward 3	TM	Transmembrane
132	LG:338010.8:2001MAR30	226	237 forward 3	TM	Cytosolic
132	LG:338010.8:2001MAR30	238	260 forward 3	TM	Transmembrane
132	LG:338010.8:2001MAR30	261	398 forward 3	TM	Non-Cytosolic
133	LG:344597.1:2001MAR30	1	709 forward 1	TM	Non-Cytosolic
133	LG:344597.1:2001MAR30	710	732 forward 1	TM	Transmembrane
133	LG:344597.1:2001MAR30	733	1020 forward 1	TM	Cytosolic
133	LG:344597.1:2001MAR30	1021	1043 forward 1	TM	Transmembrane
133	LG:344597.1:2001MAR30		1696 forward 1	TM	Non-Cytosolic
133	LG:344597.1:2001MAR30		1719 forward 1	TM	Transmembrane
133	LG:344597.1:2001MAR30	1720		TM	Cytosolic
133	LG:344597.1:2001MAR30 .	1	1663 forward 2	TM	Non-Cytosolic
133	LG:344597.1:2001MAR30	•	1686 forward 2	TM	Transmembrane
133	LG:344597.1:2001MAR30		1698 forward 2	TM	Cytosolic
133	LG:344597.1:2001MAR30		1721 forward 2	TM	Transmembrane
. 133	LG:344597.1:2001MAR30		1878 forward 2	TM	Non-Cytosolic
134	LG:347361.2:2001MAR30	1/22	1156 forward 2	TM	Non-Cytosolic
134	LG:347361.2:2001MAR30	•	1179 forward 2	TM	Transmembrane
	LG:347361.2:2001MAR30		1344 forward 2	TM	Cytosolic
134	LG:347361.2:2001M/R30		1367 forward 2	TM	Transmembrane
134	LG:347361.2:2001MAR30		2339 forward 2	TM	Non-Cytosolic
134	LG:347361.2:2001MAR30		2362 forward 2	TM	Transmembrane
134	LG:347361.2:2001MAR30		2368 forward 2	TM	Cytosolic
134	LG:347361.2:2001MAR30		2388 forward 2	TM	Transmembrane
134	LG:347361.2:2001MAR30		2438 forward 2	TM	Non-Cytosolic
134	LG:347361.2:2001MAR30		2461 forward 2	TM	Transmembrane
134	LG:347361.2:2001MAR30		2531 forward 2	TM	Cytosolic
134	LG:347361.2:2001MAR30		2554 forward 2	TM	Transmembrane
134	LG:347361.2:2001MAR30		2974 forward 2	TM	Non-Cytosolic
134	LG:347361.2:2001MAR30	1	2517 forward 3	TM	Non-Cytosolic
134	LG:347361.2:2001MAR30	•	2540 forward 3	TM	Transmembrane
134	LG:347361.2:2001MAR30	-	2546 forward 3	TM	
134	LG:347361.2:2001MAR30		2564 forward 3	TM	Cytosolic Transmembrane
134	LG:347361.2:2001MAR30		2974 forward 3	TM	
135	LG:349293.17:2001MAR30	2303	1028 forward 1	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30	•	1026 forward 1		Non-Cytosolic
135	LG:349293.17:2001MAR30		1177 forward 1	TM TM	Transmembrane
135	LG:349293.17:2001MAR30				Cytosolic
135	LG:349293.17:2001MAR30		1200 forward 1	TM TN4	Transmembrane
			1209 forward 1	TM Th 4	Non-Cytosolic
135	LG:349293.17:2001MAR30	1210	1227 forward 1	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
135	LG:349293.17:2001MAR30	1228	1334 forward 1	TM	Cytosolic
135	LG:349293.17:2001MAR30	1	878 forward 2	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30	879	901 forward 2	TM	Transmembrane
135	LG:349293.17:2001MAR30	902	969 forward 2	TM	Cytosolic
135	LG:349293.17:2001MAR30	970	992 forward 2	TM	Transmembrane
135	LG:349293.17:2001MAR30	993	1016 forward 2	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30	1017	1036 forward 2	TM	Transmembrane
135	LG:349293.17:2001MAR30	1037	1040 forward 2	TM	Cytosolic
135	LG:349293.17:2001MAR30	1041	1063 forward 2	TM	Transmembrane
135	LG:349293.17:2001MAR30	1064	1082 forward 2	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30	1083	1105 forward 2	TM	Transmembrane
135	LG:349293.17:2001MAR30	1106	1178 forward 2	TM	Cytosolic
135	LG:349293.17:2001MAR30	1179	1201 forward 2	TM	Transmembrane
135	LG:349293.17:2001MAR30	1202	1334 forward 2	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30	1	803 forward 3	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30	804	823 forward 3	TM	Transmembrane
135	LG:349293.17:2001MAR30	824	887 forward 3	TM	Cytosolic
135	LG:349293.17:2001MAR30	888	907 forward 3	TM	Transmembrane
135	LG:349293.17:2001MAR30	908	961 forward 3	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30	962	984 forward 3	TM	Transmembrane
135	LG:349293.17:2001MAR30	985	1003 forward 3	TM	Cytosolic
135	LG:349293.17:2001MAR30		1023 forward 3	TM	Transmembrane
135	LG:349293.17:2001MAR30		1032 forward 3	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30		1055 forward 3	TM	Transmembrane
135	LG:349293.17:2001MAR30		1088 forward 3	. TM	Cytosolic
	LG:349293.17:2001MAR30		1111 forward 3	: TM	Transmembrane
135	LG:349293.17:2001MAR30		1143 forward 3	TM	Non-Cytosolic
135	LG:349293.17:2001MAR30		1166 forward 3	TM	Transmembrane
135	LG:349293.17:2001MAR30		·1177 forward 3	TM	Cytosolic
135	LG:349293.17:2001MAR30	1.178	1200 forward 3	TM	Transmembrane
135	LG:349293.17:2001MAR30	1201	1334 forward 3	TM	Non-Cytosolic
136	LG:410595.19:2001MAR30	1	621 forward 1	TM	Non-Cytosolic
136	LG:410595.19:2001MAR30	622	644 forward 1	TM	Transmembrane
136	LG:410595.19:2001MAR30	645	656 forward 1	TM	Cytosolic
136	LG:410595.19:2001MAR30	657	679 forward 1	TM	Transmembrane
136	LG:410595.19:2001MAR30	680	736 forward 1	TM	Non-Cytosolic
136	LG:410595.19:2001MAR30	1	622 forward 2	TM	Non-Cytosolic
136	LG:410595.19:2001MAR30	623	645 forward 2	TM	Transmembrane
136	LG:410595.19:2001MAR30	646	651 forward 2	TM	Cytosolic
136	LG:410595.19:2001MAR30	652	674 forward 2	TM.	Transmembrane
136	LG:410595.19:2001MAR30	675	736 forward 2	TM	Non-Cytosolic
137	LG:411151.35:2001MAR30	1	1022 forward 1	TM .	Non-Cytosolic
137	LG:411151.35:2001MAR30		1045 forward 1	TM	Transmembrane
137	LG:411151.35:2001MAR30		1056 forward 1	TM	Cytosolic
137	LG:411151.35:2001MAR30		1079 forward 1	TM	Transmembrane
137	LG:411151.35:2001MAR30		1093 forward 1	TM	Non-Cytosolic
137	LG:411151.35:2001MAR30		1116 forward 1	TM	· ·
137	LG:411151.35:2001MAR30		1135 forward 1	TM	Transmembrane
137	LG:411151.35:2001MAR30			TM	Cytosolic
137	LG:411151.35:2001MAR30		1158 forward 1		Transmembrane
13/	LG.411101.30.ZUU1IVIAKSU	1104	1477 forward 1	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
137	LG:411151.35:2001MAR30	1	1450 forward 2	TM	Non-Cytosolic
137	LG:411151.35:2001MAR30	1451	1473 forward 2	TM	Transmembrane
137	LG:411151.35:2001MAR30	1474	1477 forward 2	TM	Cytosolic
138	LG:411334.8:2001MAR30	1	1300 forward 1	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	1301	1323 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	1324	1329 forward 1	TM	Cytosolic
138	LG:411334.8:2001MAR30	1330	1352 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	1353	1366 forward 1	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	1367	1389 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	1390	1395 forward 1	TM	Cytosolic
138	LG:411334.8:2001MAR30	1396	1418 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	. 1419	1464 forward 1	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	1465	1487 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	1488	1522 forward 1	TM	Cytosolic
138	LG:411334.8:2001MAR30	1523	1540 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	1541	1639 forward 1	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	1640	1662 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	1663	1682 forward 1	TM	Cytosolic
138	LG:411334.8:2001MAR30	1683	1700 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	1701	2052 forward 1	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	2053	2075 forward 1	TM	Transmembrane
138	LG:411334.8:2001MAR30	2076	2189 forward 1	TM	Cytosolic
138	LG:411334.8:2001MAR30	1	1222 forward 2	· TM	Non-Cytosolic
138	LG:411334.8:2001MAR30 .	1223	1245 forward 2	TM	Transmembrane
138.	LG:411334.8:2001MAR30	1246	1251 forward 2	TM	Cytosolic
138 ·	LG:411334.8:2001MAR30	1252	1274 forward 2	· TM	Transmembrane
138	LG:411334.8:2001MAR30	1275	1297 forward 2	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	1298	1320 forward 2	TM	Transmembrane
138	LG:411334.8:2001MAR30	1321	1566 forward 2	TM	Cytosolic
138	LG:411334.8:2001MAR30	1567	1589 forward 2	TM	Transmembrane
138	LG:411334.8:2001MAR30	1590	1603 forward 2	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30		1626 forward 2	TM	Transmembrane
138	LG:411334.8:2001MAR30	1627	1638 forward 2	TM	Cytosolic
138	LG:411334.8:2001MAR30	1639	1661 forward 2	TM	Transmembrane
138	LG:411334.8:2001MAR30	1662	2188 forward 2	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	1	848 forward 3	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30	849	871 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30		1343 forward 3	TM	Cytosolic
138	LG:411334.8:2001MAR30		1366 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30		1399 forward 3	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30		1422 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30	•	1522 forward 3	TM	Cytosolic
138	LG:411334.8:2001MAR30		1545 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30		1604 forward 3	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30		1627 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30		1639 forward 3	TM	Cytosolic
138	LG:411334.8:2001MAR30		1659 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30		1683 forward 3	TM	Non-Cytosolic
138	LG:411334.8:2001MAR30		1706 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30	1707	1717 forward 3	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
138	LG:411334.8:2001MAR30	1718	1737 forward 3	TM	Transmembrane
138	LG:411334.8:2001MAR30	1738	2188 forward 3	TM	Non-Cytosolic
139	LG:458583.1:2001MAR30	1	108 forward 2	TM	Cytosolic
139	LG:458583.1:2001MAR30	109	131 forward 2	TM	Transmembrane
139	LG:458583.1:2001MAR30	132	238 forward 2	TM	Non-Cytosolic
140	LG:475378.1:2001MAR30	, 1	1018 forward 2	TM	Non-Cytosolic
140	LG:475378.1:2001MAR30	1019	1041 forward 2	TM	Transmembrane
140	LG:475378.1:2001MAR30		1230 forward 2	TM	Cytosolic
140	LG:475378.1:2001MAR30		1253 forward 2	TM	Transmembrane
140	LG:475378.1:2001MAR30		1267 forward 2	TM	Non-Cytosolic
140	LG:475378.1:2001MAR30		1290 forward 2	TM	Transmembrane
140	LG:475378.1:2001MAR30		1310 forward 2	TM	Cytosolic
140	LG:475378.1:2001MAR30		1333 forward 2	TM	Transmembrane
140	LG:475378.1:2001MAR30		1378 forward 2	TM	Non-Cytosolic
140	LG:475378.1:2001MAR30		1401 forward 2	TM	Transmembrane
140	LG:475378.1:2001MAR30	_	1413 forward 2	TM	Cytosolic
140	LG:475378.1:2001MAR30		1436 forward 2	TM	Transmembrane
140	LG:475378.1:2001MAR30		1449 forward 2	TM	Non-Cytosolic
141	LG:481572.1:2001MAR30	1407	1131 forward 1	TM	Non-Cytosolic
141	LG:481572.1:2001MAR30	•	1154 forward 1	TM	Transmembrane
141	LG:481572.1:2001MAR30		1185 forward 1	TM	Cytosolic
141	LG:481572.1:2001MAR30		1208 forward 1	TM	Transmembrane
141	LG:481572.1:2001MAR30		1212 forward 1	· TM	
141	LG:481572.1:2001MAR30		1235 forward 1	TM	Non-Cytosolic
141	LG:481572.1:2001MAR30		1241 forward 1	TM	Transmembrane
141	LG:481572.1:2001MAR30		1264 forward T	TM	Cytosolic Transmembrane
141	LG:481572.1:2001MAR30		1725 forward 1	TM	
141	LG:481572.1:2001MAR30	1200	1725 forward 2	TM	Non-Cytosolic
141	LG:481572.1:2001MAR30	•	1208 forward 2	TM	Non-Cytosolic
141	LG:481572.1:2001MAR30		1212 forward 2	. TM	Transmembrane
141	LG:481572.1:2001MAR30		1212 forward 2	TM	Cytosolic
141	LG:481572.1:2001MAR30		1725 forward 2	TM	Transmembrane
141	LG:481704.1:2001MAR30	1200	342 forward 1	TM	Non-Cytosolic
142	LG:481704.1:2001MAR30	•			Non-Cytosolic
142	LG:481704.1:2001MAR30	343	365 forward 1 411 forward 1	TM	Transmembrane
142	LG:481704.1:2001MAR30	366		TM	Cytosolic
		412	434 forward 1	TM	Transmembrane
142	LG:481704.1:2001MAR30	435	448 forward 1	TM	Non-Cytosolic
142 142	LG:481704.1:2001MAR30 LG:481704.1:2001MAR30	449	471 forward 1	TM	Transmembrane
		472	526 forward 1	TM	Cytosolic
142	LG:481704.1:2001MAR30	1	433 forward 2	TM	Non-Cytosolic
142	LG:481704.1:2001MAR30	434	456 forward 2	TM	Transmembrane
142	LG:481704.1:2001MAR30	457	462 forward 2	TM	Cytosolic
142	LG:481704.1:2001MAR30	463	485 forward 2	TM	Transmembrane
142	LG:481704.1:2001MAR30	486	525 forward 2	TM	Non-Cytosolic
142	LG:481704.1:2001MAR30	150	457 forward 3	TM	Non-Cytosolic
142	LG:481704.1:2001MAR30	458	480 forward 3	TM	Transmembrane
142	LG:481704.1:2001MAR30	481	500 forward 3	TM	Cytosolic
142	LG:481704.1:2001MAR30	501	523 forward 3	TM	Transmembrane
142	LG:481704.1:2001MAR30	524	525 forward 3	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30	1	739 forward 1	TM:	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
143	LG:898195.4:2001MAR30	740	759 forward 1	· TM	Transmembrane
143	LG:898195.4:2001MAR30	760	876 forward 1	TM	Cytosolic
143	LG:898195.4:2001MAR30	877	899 forward 1	TM	Transmembrane
143	LG:898195.4:2001MAR30	900	1162 forward 1	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30	1163	1185 forward 1	TM	Transmembrane
143	LG:898195.4:2001MAR30	1186		TM	Cytosolic
143	LG:898195.4:2001MAR30	1	738 forward 2	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30	739	761 forward 2	TM	Transmembrane
143	LG:898195.4:2001MAR30	762	878 forward 2	TM	Cytosolic
143	LG:898195.4:2001MAR30	879	901 forward 2	TM	Transmembrane
143	LG:898195.4:2001MAR30	902	1020 forward 2	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30	1021	1043 forward 2	TM	Transmembrane
143	LG:898195.4:2001MAR30	1044		TM	Cytosolic
143	LG:898195.4:2001MAR30	1131	1153 forward 2	TM	Transmembrane
143	LG:898195.4:2001MAR30		1162 forward 2	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30		1185 forward 2	TM	Transmembrane
143	LG:898195.4:2001MAR30			TM	Cytosolic
143	LG:898195.4:2001MAR30	1	516 forward 3	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30	517	539 forward 3	TM	Transmembrane
143	LG:898195.4:2001MAR30	. 540	637 forward 3	TM	Cytosolic
143	LG:898195.4:2001MAR30	638	660 forward 3	TM	Transmembrane
143	LG:898195.4:2001MAR30	661	738 .forward 3 .	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30	: 739	761 forward 3	· TM	Transmembrane
143	LG:898195.4:2001MAR30	. 762	780 . forward: 3	TM	
143	LG:898195.4:2001MAR30	781	803 forward 3	TM	Cytosolic
143	LG:898195.4:2001MAR30	804	874 forward 3	TM	Transmembrane
143	LG:898195.4:2001MAR30	875	897. forward 3	TM	Non-Cytosolic Transmembrane
143	LG:898195.4:2001MAR30	898	1016 forward 3	TM	
143	LG:898195.4:2001MAR30	1017	1039 forward 3	TM	Cytosolic Transmembrane
143	LG:898195.4:2001MAR30	1040	1058 forward 3.	TM	
143	LG:898195.4:2001MAR30		1081 forward 3	TM	Non-Cytosolic
143	LG:898195.4:2001MAR30		1089 forward 3	TM	Transmembrane
143	LG:898195.4:2001MAR30		1112 forward 3	TM	Cytosolic
143	LG:898195.4:2001MAR30		1131 forward 3		Transmembrane
143	LG:898195.4:2001MAR30		1154 forward 3	TM TM	Non-Cytosolic
143	LG:898195.4:2001MAR30		1160 forward 3	TM	Transmembrane
143	LG:898195.4:2001MAR30		1183 forward 3	TM	Cytosolic Transmembrane
143	LG:898195.4:2001MAR30		1204 forward 3	TM	•
144	LG:903785.1:2001MAR30	1104	1456 forward 2	TM	Non-Cytosolic
144	LG:903785.1:2001MAR30	•	1479 forward 2	TM	Non-Cytosolic
144	LG:903785.1:2001MAR30		1483 forward 2		Transmembrane
144	LG:903785.1:2001MAR30		1501 forward 2	TM	Cytosolic
144	LG:903785.1:2001MAR30		1541 forward 2	TM	Transmembrane
144	LG:903785.1:2001MAR30			TM	Non-Cytosolic
144	LG:903785.1:2001MAR30		1564 forward 2	TM	Transmembrane
144	LG:903785.1:2001MAR30		1570 forward 2	TM	Cytosolic
			1593 forward 2	TM	Transmembrane
144	LG:903785.1:2001MAR30		1602 forward 2	TM	Non-Cytosolic
144	LG:903785.1:2001MAR30		1620 forward 2	TM	Transmembrane
144	LG:903785.1:2001MAR30		1676 forward 2	TM	Cytosolic
145	LG:977454.3:2001MAR30	1	344 forward 1	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
145	LG:977454.3:2001MAR30	345	367 forward 1	TM	Transmembrane
145	LG:977454.3:2001MAR30	368	387 forward 1	TM	Cytosolic
145	LG:977454.3:2001MAR30	388	407 forward 1	TM	Transmembrane
145	LG:977454.3:2001MAR30	408	1017 forward 1	TM	Non-Cytosolic
145	LG:977454.3:2001MAR30	1	216 forward 2	TM	Non-Cytosolic
145	LG:977454.3:2001MAR30	217	239 forward 2	TM	Transmembrane
145	LG:977454.3:2001MAR30	240	334 forward 2	TM	Cytosolic
145	LG:977454.3:2001MAR30	335	357 forward 2	TM	Transmembrane
145	LG:977454.3:2001MAR30	358	360 forward 2	TM	Non-Cytosolic
145	LG:977454.3:2001MAR30	361	383 forward 2	TM	Transmembrane
145	LG:977454.3:2001MAR30	384	395 forward 2	TM	Cytosolic
145	LG:977454.3:2001MAR30	396	418 forward 2	TM	Transmembrane
145	LG:977454.3:2001MAR30	419	1017 forward 2	TM	Non-Cytosolic
146	LG:977724.12:2001MAR30	1	1131 forward 1	TM	Non-Cytosolic
146	LG:977724.12:2001MAR30	1132	1154 forward 1	TM	Transmembrane
146	LG:977724.12:2001MAR30	1155	1635 forward 1	TM	Cytosolic
146	LG:977724.12:2001MAR30	1636	1658 forward 1	TM	Transmembrane
146	LG:977724.12:2001MAR30	1659	1667 forward 1	TM	Non-Cytosolic
146	LG:977724.12:2001MAR30	1668	1685 forward 1	TM	Transmembrane
146	LG:977724.12:2001MAR30	1686	1735 forward 1	TM	Cytosolic
146	LG:977724.12:2001MAR30	1	1144 forward 2	TM	Non-Cytosolic
146	LG:977724.12:2001MAR30	1145	1167 forward 2	. TM	Transmembrane
146	LG:977724.12:2001MAR30	1168	1636 forward 2	TM	Cytosolic
146	LG:977724.12:2001MAR30	. 1637	1659 forward 2	TM	Transmembrane
- 146	LG:977724.12:2001MAR30	1660	1662 forward 2	TM	Non-Cytosolic
146	LG:977724.12:2001MAR30	1663	1685 forward 2	· TM	Transmembrane
146	LG:977724.12:2001MAR30	1686	1734 forward 2.	· TM	Cytosolic
146	LG:977724.12:2001MAR30	1 .	1598 forward 3	TM	Non-Cytosolic
146	LG:977724.12:2001MAR30	1599	1621 forward 3	TM ·	Transmembrane
146	LG:977724.12:2001MAR30	1622	1669 forward 3	.TM	Cytosolic
146	LG:977724.12:2001MAR30	1670	1687 forward 3	TM	Transmembrane
146	LG:977724.12:2001MAR30	1688	1696 forward 3	TM	Non-Cytosolic
146	LG:977724.12:2001MAR30	1697	1719 forward 3	TM ·	Transmembrane
146	LG:977724.12:2001MAR30	1720	1734 forward 3	TM	Cytosolic
147	LG:978215.19:2001MAR30	1	57 forward 3	TM	Cytosolic
147	LG:978215.19:2001MAR30	58	80 forward 3	TM	Transmembrane
147	LG:978215.19:2001MAR30	81	909 forward 3	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	1	19 forward 1	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	20	42 forward 1	·TM	Transmembrane
148	LG:981795.1:2001MAR30	43	95 forward 1	. TM	Cytosolic
148	LG:981795.1:2001MAR30	96	118 forward 1	TM	Transmembrane
148	LG:981795.1:2001MAR30	119	166 forward 1	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	167	189 forward 1	TM	Transmembrane
148	LG:981795.1:2001MAR30	190	209 forward 1	TM	Cytosolic
148	LG:981795.1:2001MAR30	210	232 forward 1	MT	Transmembrane
148	LG:981795.1:2001MAR30	233	259 forward 1	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	260	282 forward 1	TM	Transmembrane
148	LG:981795.1:2001MAR30	283	457 forward 1	TM	Cytosolic
148	LG:981795.1:2001MAR30	458	480 forward 1	TM	Transmembrane
148	LG:981795.1:2001MAR30	481	798 forward 1	TM	Non-Cytosolic

SEQ ID NO:	Template iD	Start	Stop	Frame	Domain	Topology
148	LG:981795.1:2001MAR30	1	74	forward 2	TM	Cytosolic
148	LG:981795.1:2001MAR30	75	97	forward 2	· TM	Transmembrane
148	LG:981795.1:2001MAR30	98	106	forward 2	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	107	129	forward 2	TM	Transmembrane
148	LG:981795.1:2001MAR30	130	224	forward 2	TM	Cytosolic
148	LG:981795.1:2001MAR30	225	247	forward 2	TM	Transmembrane
148	LG:981795.1:2001MAR30	248	261	forward 2	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	262	282	forward 2	TM	Transmembrane
148	LG:981795.1:2001MAR30	283	372	forward 2	TM	Cytosolic
148	LG:981795.1:2001MAR30	373	395	forward 2	TM	Transmembrane
148	LG:981795.1:2001MAR30	396	414	forward 2	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	415	437	forward 2	TM	Transmembrane
148	LG:981795.1:2001MAR30	438	798	forward 2	TM	Cytosolic
148	LG:981795.1:2001MAR30	1	4	forward 3	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	5	22	forward 3	TM	Transmembrane
148	LG:981795.1:2001MAR30	23	224	forward 3	TM	Cytosolic
148	LG:981795.1:2001MAR30	225	247	forward 3	` TM	Transmembrane
148	LG:981795.1:2001MAR30	248	261	forward 3	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	262	281	forward 3	TM	Transmembrane
148	LG:981795.1:2001MAR30	282	372	forward 3	TM	Cytosolic
148	LG:981795.1:2001MAR30	373	395	forward 3	TM	Transmembrane
148	LG:981795.1:2001MAR30	396	456	forward 3	TM	Non-Cytosolic
148	LG:981795.1:2001MAR30	457	479	forward 3	TM	Transmembrane
148	LG:981795.1:2001MAR30	480	· 536	forward 3	TM	Cytosolic
148	LG:981795.1:2001MAR30	537`	559	forward 3	TM	Transmembrane
1.48	LG:981795.1:2001MAR30	560 -	·797·	forward 3	TM	Non-Cytosolic
149	LG:982784.1:2001MAR30	1 .	315	forward.1	TM	Non-Cytosolic
149	LG:982784.1:2001MAR30	316	338	forward 1	TM	Transmembrane
149	LG:982784.1:2001MAR30	339	358	forward 1	TM	.Cytosolic
149	LG:982784.1:2001MAR30	359	381	forward 1	TM	Transmembrane
149	LG:982784.1:2001MAR30	382		forward 1	TM	Non-Cytosolic
149	LG:982784.1:2001MAR30	1		forward 2	TM	Non-Cytosolic
149	LG:982784.1:2001MAR30	360	382	.forward 2	TM	Transmembrane
149	LG:982784.1:2001MAR30	383	490	forward 2	TM	Cytosolic
149	LG:982784.1:2001MAR30	1	227	forward 3	TM	Cytosolic
149	LG:982784.1:2001MAR30	228		forward 3	TM	Transmembrane
149	LG:982784.1:2001MAR30	247		forward 3	TM	Non-Cytosolic
149	LG:982784.1:2001MAR30	256		forward 3	TM	Transmembrane
149	LG:982784.1:2001MAR30	279		forward 3	TM	Cytosolic
150	LG:987322.4:2001MAR30	1		forward 1	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30	821		forward 1	TM	Transmembrane
150	LG:987322.4:2001MAR30	844		forward 1	TM	Cytosolic
150	LG:987322.4:2001MAR30	863		forward 1	TM	Transmembrane
150	LG:987322.4:2001MAR30	886		forward 1	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30			forward 1	TM	Transmembrane
150	LG:987322.4:2001MAR30			forward 1	TM	Cytosolic
150	LG:987322.4:2001MAR30			forward 1	TM	Transmembrane
150	LG:987322.4:2001MAR30			forward 1	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30			forward 1	TM	Transmembrane
150	LG:987322.4:2001MAR30	1301	1320	forward 1	TM	Cytosolic

SEQ ID N	O: Template ID	Start	Stop Frame	Domain	Topology
150	LG:987322.4:2001MAR30	1321	1343 forward 1	TM	Transmembrane
150	LG:987322.4:2001MAR30	1344	1352 forward 1	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30	1353	1372 forward 1	TM	Transmembrane
150	LG:987322.4:2001MAR30		1374 forward 1	TM	Cytosolic
150	LG:987322.4:2001MAR30	1	826 forward 2	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30	827	845 forward 2	TM	Transmembrane
150	LG:987322.4:2001MAR30	846	865 forward 2	TM	Cytosolic
150	LG:987322.4:2001MAR30	866	888 forward 2	TM	Transmembrane
150	LG:987322.4:2001MAR30	889	995 forward 2	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30	996	1018 forward 2	TM	Transmembrane
150	LG:987322.4:2001MAR30	1019	1030 forward 2	TM	Cytosolic
150	LG:987322.4:2001MAR30	1031	1053 forward 2	TM	Transmembrane
150	LG:987322.4:2001MAR30		1083 forward 2	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30		1103 forward 2	TM	Transmembrane
150	LG:987322,4:2001MAR30		1313 forward 2	TM	Cytosolic
150	LG:987322.4:2001MAR30		1333 forward 2	TM	Transmembrane
150	LG:987322.4:2001MAR30		1352 forward 2	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30		1372 forward 2	TM	Transmembrane
150	LG:987322.4:2001MAR30		1373 forward 2	TM	Cytosolic
150	LG:987322.4:2001MAR30	1070	507 forward 3	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30	508	530 forward 3	TM	Transmembrane
150	LG:987322.4:2001MAR30	531	659 forward 3	· TM	Cytosolic
: 150	LG:987322.4:2001MAR30	660	682 forward 3	. TM	Transmembrane
150	LG:987322.4:2001MAR30	683	691 forward 3	TM	Non-Cytosolic
150	LG:987322.4:2001MAR30	692	709 forward 3	TM	Transmembrane
150	LG:987322.4:2001MAR30	710	812 forward 3	TM	Cytosolic
150	LG:987322.4:2001MAR30	813	835 forward 3	· TM	Transmembrane
150	LG:987322.4:2001MAR30	836	1373 forward 3	TM	Non-Cytosolic
. 151	LG:006242.7:2001MAR30	1	608. forward 2	. TM	Non-Cytosolic
151	LG:006242.7:2001MAR30	609	631 forward 2	TM	Transmembrane
151	LG:006242.7:2001MAR30	632	744 forward 2	TM	Cytosolic
151	LG:006242.7:2001MAR30	1	585 forward 3	TM	Non-Cytosolic
151	LG:006242.7:2001MAR30	586	608 forward 3	TM	Transmembrane
151	LG:006242.7:2001MAR30	609	628 forward 3	TM	Cytosolic
151	LG:006242.7:2001MAR30	629	651 forward 3	TM	Transmembrane
151	LG:006242.7:2001MAR30	652	744 forward 3	TM	Non-Cytosolic
152	LG:027320.7:2001MAR30	1	194 forward 2	TM	Cytosolic
152	LG:027320.7:2001MAR30	195	217 forward 2	TM	Transmembrane
152	LG:027320.7:2001MAR30	218	236 forward 2	TM	Non-Cytosolic
152	LG:027320.7:2001MAR30	237	259 forward 2	TM	Transmembrane
152	LG:027320.7:2001MAR30	260	375 forward 2	TM	Cytosolic
152	LG:027320.7:2001MAR30	376	398 forward 2	TM	Transmembrane
152	LG:027320.7:2001MAR30	399	425 forward 2	TM	Non-Cytosolic
152	LG:027320.7:2001MAR30	426	448 forward 2	TM	Transmembrane
152	LG:027320.7:2001MAR30	449	460 forward 2	TM	Cytosolic
152	LG:027320.7:2001MAR30	461	483 forward 2	TM	Transmembrane
152	LG:027320.7:2001MAR30	484	486 forward 2	TM	Non-Cytosolic
152	LG:027320.7:2001MAR30	1	194 forward 3	TM	Cytosolic
152	LG:027320.7:2001MAR30	195	217 forward 3	TM	Transmembrane
152	LG:027320.7:2001MAR30	218	248 forward 3	TM	Non-Cytosolic
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SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
152	LG:027320.7:2001MAR30	249	264 forward 3	TM	Transmembrane
152	LG:027320.7:2001MAR30	265	276 forward 3	TM	Cytosolic
152	LG:027320.7:2001MAR30	277	299 forward 3	TM	Transmembrane
152	LG:027320.7:2001MAR30	300	318 forward 3	TM	Non-Cytosolic
152	LG:027320.7:2001MAR30	319	341 forward 3	TM	Transmembrane
152	LG:027320.7:2001MAR30	342	361 forward 3		Cytosolic
152	LG:027320.7:2001MAR30	362	384 forward 3	TM	Transmembrane
152	LG:027320.7:2001MAR30	385	387 forward 3	TM	Non-Cytosolic
152	LG:027320.7:2001MAR30	388	410 forward 3	TM	Transmembrane
152	LG:027320.7:2001MAR30	411	485 forward 3	TM	Cytosolic
153	LG:147541.44:2001MAR30	1	373 forward 1	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	374	396 forward 1	TM	Transmembrane
153	LG:147541.44:2001MAR30	397	407 forward 1	. TM	Cytosolic
153	LG:147541.44:2001MAR30	408	430 forward 1	TM	Transmembrane
153	LG:147541.44:2001MAR30	431	497 forward 1	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	498	520 forward 1	TM	Transmembrane
153	LG:147541.44:2001MAR30	521	570 forward 1	TM	Cytosolic
153	LG:147541.44:2001MAR30	571	593 forward 1	TM	Transmembrane
153	LG:147541.44:2001MAR30	594	940 forward 1	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	941	963 forward 1	TM	Transmembrane
153	LG:147541.44:2001MAR30	964	971 forward 1	TM	Cytosolic
153	LG:147541.44:2001MAR30	972	994 forward 1	TM	Transmembrane
153	LG:147541.44:2001MAR30	995	1218 forward 1	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	1	364 forward 2	TM	Non-Cytosolic
	LG:147541.44:2001MAR30	365	387 forward 2	TM	Transmembrane
153 ·-	LG:147541.44:2001MAR30	388	399 forward 2	TM	Cytosolic
153	LG:147541.44:2001MAR30	400	419 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30	420	802 forward 2	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30.	803	820 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30	821	852 forward 2	TM	Cytosolic
153	LG:147541.44:2001MAR30	853	872 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30	873	886 forward 2	-TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	887	901 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30	902	920 forward 2	TM	Cytosolic
153	LG:147541.44:2001MAR30	921	943 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30	944	962 forward 2	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	963	985 forward 2	· TM	Transmembrane
153	LG:147541.44:2001MAR30	986	1047 forward 2	TM	Cytosolic
153	LG:147541.44:2001MAR30		1070 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30		1084 forward 2	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30		1103 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30	1104	1109 forward 2	TM	Cytosolic
153	LG:147541.44:2001MAR30		1132 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30		1146 forward 2	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30		1169 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30		1189 forward 2	TM	Cytosolic
153	LG:147541.44:2001MAR30		1212 forward 2	TM	Transmembrane
153	LG:147541.44:2001MAR30		1217 forward 2	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	12.0	71 forward 3	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	72	94 forward 3	TM	Transmembrane
		, 4			

SEQ ID NO:	Template ID		Stop		Domain	Topology
153	LG:147541.44:2001MAR30	95		forward 3	TM	Cytosolic
153	LG:147541.44:2001MAR30	352		forward 3	TΜ	Transmembrane
153	LG:147541.44:2001MAR30	370		forward 3	TM	Non-Cytosolic
153	LG:147541.44:2001MAR30	373		forward 3	TM	Transmembrane
153	LG:147541.44:2001MAR30	391	497	forward 3	TM	Cytosolic
153	LG:147541.44:2001MAR30	498	520	forward 3	TM	Transmembrane
153	LG:147541.44:2001MAR30	521	1217	forward 3	TM	Non-Cytosolic
154	LG:228319.2:2001MAR30	1	305	forward 2	TM	Non-Cytosolic
154	LG:228319.2:2001MAR30	306	328	forward 2	TM	Transmembrane
154	LG:228319.2:2001MAR30	329	410	forward 2	TM	Cytosolic
154	LG:228319.2:2001MAR30	411	433	forward 2	TM	Transmembrane
154	LG:228319.2:2001MAR30	434	461	forward 2	TM	Non-Cytosolic
155	LG:238754.19:2001MAR30	1	275	forward 1	TM	Cytosolic
155	LG:238754.19:2001MAR30	276	298	forward 1	TM	Transmembrane
155	LG:238754.19:2001MAR30	299	764	forward 1	TM	Non-Cytosolic
155	LG:238754.19:2001MAR30	1	274	forward 3	TM	Cytosolic
155	LG:238754.19:2001MAR30	275	297	forward 3	TM	Transmembrane
155	LG:238754.19:2001MAR30	298	306	forward 3	TM	Non-Cytosolic
155	LG:238754.19:2001MAR30	307		forward 3	TM	Transmembrane
155	LG:238754.19:2001MAR30	330		forward 3	TM	Cytosolic
155	LG:238754.19:2001MAR30	420		forward 3	TM	Transmembrane
155	LG:238754.19:2001MAR30	440		forward 3	TM	Non-Cytosolic
156	LG:405751.12:2001MAR30	1		forward 1	· TM	Non-Cytosolic
156	LG:405751.12:2001MAR30	582		forward 1	TM	. Transmembrane
156	LG:405751.12:2001MAR30	- 605		forward 1	· TM	Cytosolic
156	LG:405751.12:2001MAR30	778		forward 1	TM	Transmembrane
156	LG:405751.12:2001MAR30	798		forward 1	· TM	Non-Cytosolic
156	LG:405751.12:2001MAR30	1		forward 2	TM	Non-Cytosolic
156	LG:405751.12:2001MAR30	581		forward 2	TM	Transmembrane
156	LG:405751.12:2001MAR30	604		forward 2	TM	Cytosolic
156	LG:405751.12:2001MAR30	633		forward 2	TM	Transmembrane
156	LG:405751.12:2001MAR30	656		forward 2	TM	Non-Cytosolic
156	LG:405751.12:2001MAR30	1	98	forward 3	TM	Cytosolic
156	LG:405751.12:2001MAR30	99		forward 3	TM	Transmembrane
156	LG:405751.12:2001MAR30	119		forward 3	TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	1	4	forward 1	TM	Cytosolic
237	LI:018494.1:2001MAY17	5	27	forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	28		forward 1	TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	37	59	forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	60	79	forward 1	TM	Cytosolic
237	LI:018494.1:2001MAY17	80		forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	103		forward 1	TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	117		forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	140		forward 1	TM	Cytosolic
237	LI:018494.1:2001MAY17	146		forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	169		forward 1	TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	188		forward 1	TM	Transmembrane
237	L:018494.1:2001MAY17	211		forward 1	TM	Cytosolic
237	LI:018494.1:2001MAY17	231		forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	254		forward 1	TM	Non-Cytosolic
		20-	207	JI WOOD		. 10.1 - 71000110

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
237	LI:018494.1:2001MAY17	288	310	forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	311	330	forward 1	TM	Cytosolic
237	LI:018494.1:2001MAY17	331	353	forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	354	362	forward 1	TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	363	385	forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	386	391	forward 1	TM	Cytosolic
237	Ц:018494.1:2001MAY17	392	414	forward 1	TM	Transmembrane
237	U:018494.1:2001MAY17	415	-	forward 1	TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	470		forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	493	581		TM	Cytosolic
237	LI:018494.1:2001MAY17	582	604		TM	Transmembrane
237	LI:018494.1:2001MAY17	605	623		TM	Non-Cytosolic
237	U:018494.1:2001MAY17	624		forward 1	TM	Transmembrane
237	U:018494.1:2001MAY17	647		forward 1	TM	Cytosolic
237	LI:018494.1:2001MAY17	766		forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	789	791		TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	792		forward 1	TM	Transmembrane
237	LI:018494.1:2001MAY17	815		forward 1	TM	Cytosolic
237	LI:018494.1:2001MAY17	1		forward 2	TM	Non-Cytosolic
237	U:018494.1:2001MAY17	460		forward 2	TM	Transmembrane
237	L:018494.1:2001MAY17	483		forward 2	TM	Cytosolic
237	LI:018494.1:2001MAY17	7.67		forward 2	TM	Transmembrane
237	LI:018494.1:2001MAY17	790	808		TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	809	831		TM .	Transmembrane
237	LI:018494.1:2001MAY17	832		forward 2	. TM	Cytosolic
237	LI:018494.1:2001MAY17	.]		forward 3	TM	Non-Cytosolic
237	LI:018494.1:2001MAY17	583		forward 3	TM	Transmembrane
237	LI:018494.1:2001MAY17	606	611		TM	Cytosolic
237	LI:018494.1:2001MAY17	612		forward 3	TM	Transmembrane
237	U:018494.1:2001МАY17	635		forward 3	TM	Non-Cytosolic
237	U:018494.1:2001MAY17	662		forward 3	TM	Transmembrane
237	U:018494.1:2001MAY17	685	771	forward 3	TM	Cytosolic
237	LI:018494.1:2001MAY17	772		forward 3	TM	Transmembrane
237	LI:018494.1:2001MAY17	795		forward 3	TM	Non-Cytosolic
237	L:018494.1:2001MAY17	804		forward 3	TM	Transmembrane
237	LI:018494.1:2001MAY17	827		forward 3	TM	Cytosolic
238	LI:023518.2:2001MAY17	1		forward 1	TM	Non-Cytosolic
238	LI:023518.2:2001MAY17	359		forward 1	TM	Transmembrane
238	LI:023518.2:2001MAY17	382		forward 1	TM	Cytosolic
238	LI:023518.2:2001MAY17	1		forward 2	TM	Non-Cytosolic
238	LI:023518.2:2001MAY17	358		forward 2	TM	Transmembrane
238	LI:023518.2:2001MAY17	381		forward 2	TM	Cytosolic
239	LI:053488.46:2001MAY17	301		forward 2	TM	Non-Cytosolic
239	LI:053488.46:2001MAY17	634		forward 2	TM	Transmembrane
239	L:053488.46:2001MAY17	657		forward 2	TM	
239	L:053488.46:2001MAY17	007	50	forward 3	TM	Cytosolic Cytosolic
239	U:053488.46:2001MAY17	-	73	forward 3	TM	•
239 239	LI:053488.46:2001MAY17	51 74			TM	Transmembrane
239 240	U:058298.27:2001MAY17	74		forward 3	TM	Non-Cytosolic
		1		forward 2		Cytosolic
240	U:058298.27:2001MAY17	89	111	forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
240	U:058298.27:2001MAY17	112	426	forward 2	TM	Non-Cytosolic
241	LI:1110046.1:2001MAY17	1	544	forward 2	TM	Non-Cytosolic
241	LI:1110046.1:2001MAY17	545	567	forward 2	TM	Transmembrane
241	LI:1110046.1:2001MAY17	568	604	forward 2	TM	Cytosolic
241	U:1110046.1:2001МАҮ17	3	40	forward 3	TM	Cytosolic
241	U:1110046.1:2001MAY17	41	63	forward 3	TM	Transmembrane
241	LI:1110046.1:2001MAY17	64	72	forward 3	TM	Non-Cytosolic
241	LI:1110046.1:2001MAY17	73	95	forward 3	TM	Transmembrane
241	U:1110046.1:2001MAY17	96	115	forward 3	TM	Cytosolic
241	LI:1110046.1:2001MAY17	116	138	forward 3	TM	Transmembrane .
241	LI:1110046.1:2001MAY17	139	171	forward 3	TM	Non-Cytosolic
241	LI:1110046.1:2001MAY17	172	194	forward 3	TM	Transmembrane
241	LI:1110046.1:2001MAY17	195	206	forward 3	TM	Cytosolic
241	LI:1110046.1:2001MAY17	207	229	forward 3	TM	Transmembrane
241	LI:1110046.1:2001MAY17	230	256	forward 3	TM	Non-Cytosolic
241	U:1110046.1:2001MAY17	257	276	forward 3	TM	Transmembrane
241	U:1110046.1:2001MAY17	277	399	forward 3	TM	Cytosolic
241	LI:1110046.1:2001MAY17	400	422	forward 3	TM	Transmembrane
241	LI:1110046.1:2001MAY17	423	472	forward 3	TM	Non-Cytosolic
241	U:1110046.1:2001MAY17	473	495	forward 3	TM	Transmembrane
241	LI:1110046.1:2001MAY17	496	541	forward 3	TM	Cytosolic
241	U:1110046.1:2001MAY17	542	561	forward 3	. · TM	Transmembrane
241 :	LI:1110046.1:2001MAY17	562	575	forward 3	TM	Non-Cytosolic
241	U:1110046.1:2001МАҮ17	576	593	forward 3	. TM	Transmembrane
241	LI:1110046.1:2001MAY17	594	604	forward 3	TM	Cytosolic
242	LI:1166752.11:2001MAY17	1	507	forward 3	TM	Non-Cytosolic
242	LI:1166752.11:2001MAY17	508	530	forward 3	TM	Transmembrane
242	U:1166752.11:2001MAY17	531		forward 3	TM	Cytosolic
243	LI:1173766.1:2001MAY17 .	· 1		forward 2	. TM	Non-Cytosolic
243	U:1173766.1:2001MAY17	· 779		forward 2	TM	Transmembrane
243	U:1173766.1:2001MAY17	802		forward 2	TM	Cytosolic
243	U:1173766.1:2001MAY17	822		forward 2	TM	Transmembrane
243	LI:1173766.1:2001MAY17	840	879	forward 2	TM	Non-Cytosolic
243	U:1173766.1:2001MAY17	880		forward 2	TM	Transmembrane
243	U:1173766.1:2001MAY17	900		forward 2	TM	Cytosolic
244	U:1177952.4:2001MAY17	1		forward 1	TM	Non-Cytosolic
244	L:1177952.4:2001MAY17	249		forward 1	TM	Transmembrane
244	U:1177952.4:2001MAY17	272		forward 1	TM	Cytosolic
244	U:1177952.4:2001МАY17	339		forward 1	TM	Transmembrane
244	U:1177952.4:2001MAY17	362		forward 1	TM	Non-Cytosolic
245	U:1178064.3:2001MAY17	1		forward 3	TM	Non-Cytosolic
245	U:1178064.3:2001МАУ17			forward 3	TM	Transmembrane
245	LI:1178064.3:2001MAY17			forward 3	TM	Cytosolic
246	U:1183121.1:2001MAY17	1		forward 1	TM	Non-Cytosolic
246	U:1183121.1:2001MAY17	438		forward 1	TM	Transmembrane
246	U:1183121.1:2001MAY17	461		forward 1	TM	Cytosolic
246	U:1183121.1:2001MAY17	512		forward 1	TM	Transmembrane
246	LI:1183121.1:2001MAY17	535		forward 1	TM	Non-Cytosolic
246	U:1183121.1:2001MAY17	591		forward 1	TM	Transmembrane
246	LI:1183121.1:2001MAY17	614	868	forward 1	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop -	Frame	Domain	Topology
246	U:1183121.1:2001MAY17	869	891 fc	orward 1	TM	Transmembrane
246	U:1183121.1:2001MAY17	892	913 fc	orward 1	TM	Non-Cytosolic
246	LI:1183121.1:2001MAY17	914	936 fc	orward 1	TM	Transmembrane
246	U:1183121.1:2001MAY17	937	948 fc	orward 1	TM	Cytosolic
246	U:1183121.1:2001MAY17	949	971 fc	orward 1	TM	Transmembrane
246	U:1183121.1:2001МАҮ17	972	1011 fc	orward 1	TM	Non-Cytosolic
246	LI:1183121.1:2001MAY17	1012	1034 fc	orward 1	TM	Transmembrane
246	LI:1183121.1:2001MAY17	1035	1057 fc	orward 1	TM	Cytosolic
246	LI:1183121.1:2001MAY17	1	913 fc	orward 2	TM	Non-Cytosolic
246	U:1183121.1:2001МАY17	914		orward 2	TM	Transmembrane
246	U:1183121.1:2001МАҮ17	937		orward 2	TM	Cytosolic
246	U:1183121.1:2001МАY17	949		orward 2	TM	Transmembrane
246	U:1183121.1:2001МАY17	972		orward 2	TM	Non-Cytosolic
246	U:1183121.1:2001МАY17			orward 2	TM	Transmembrane
246	U:1183121.1:2001MAY17			orward 2	TM	Cytosolic
246	U:1183121.1:2001MAY17	1		orward 3	TM	Non-Cytosolic
246	LI:1183121.1:2001MAY17	574		orward 3	TM	Transmembrane
246	U:1183121.1:2001MAY17	597		orward 3	TM	Cytosolic
246	L:1183121.1:2001MAY17	792		orward 3	TM	Transmembrane
246	U:1183121.1:2001МАҮ17	810		orward 3	TM	Non-Cytosolic
246	LI:1183121.1:2001MAY17	874		orward 3	TM	Transmembrane
246	LI:1183121.1:2001MAY17	897		orward 3	TM	Cytosolic
246	LI:1183121.1:2001MAY17	916		orward 3	TM	Transmembrane
246	U:1183121.1:2001МАY17	939		orward 3	TM	Non-Cytosolic
246	LI:1183121.1:2001MAY17	953		orward 3	TM	Transmembrane
246	LI:1183121.1:2001MAY17			orward 3	TM	Cytosolic
247	LI:1190431.13:2001MAY17	1		orward 1	TM	Non-Cytosolic
247	U:1190431.13:2001МАY17	•		orward 1	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 1	TM	Cytosolic
247	LI:1190431.13:2001MAY17			orward 1	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 1	TM	Non-Cytosolic
247	LI:1190431.13:2001MAY17		_	orward 1	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 1	TM	Cytosolic
247	LI:1190431.13:2001MAY17			orward 1	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 1	TM	Non-Cytosolic
247	U:1190431.13:2001МАУ17	1		orward 2	TM	Non-Cytosolic
247	U:1190431.13:2001МАY17	1382		orward 2	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 2	TM	Cytosolic
247	LI:1190431.13:2001MAY17			orward 2	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 2	TM	Non-Cytosolic
247	LI:1190431.13:2001MAY17			orward 2	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 2	TM	Cytosolic
247	LI:1190431.13:2001MAY17			orward 2	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 2	TM	Non-Cytosolic
247	LI:1190431.13:2001MAY17	1		orward 3	· TM	Non-Cytosolic
247	LI:1190431.13:2001MAY17	•		orward 3	TM	Transmembrane
247	LI:1190431.13:2001MAY17			orward 3	TM	Cytosolic
247 248	LI:199121.14:2001MAY17	2233		orward 1	TM	Non-Cytosolic
248 248	LI:199121.14:2001MAY17	832		orward 1	TM	Transmembrane
	L:199121.14:2001MAY17				TM	
248	LI. 177121.14.2001NM11/	855	OOU IC	orward 1	HVI	Cytosolic

248 LI:199121.14:2001MAY17 861 880 forward 1 TM Ironsmembrane 248 LI:199121.14:2001MAY17 1249 1226 forward 1 TM Non-Cytosolic 248 LI:199121.14:2001MAY17 1249 1226 forward 1 TM Non-Cytosolic 248 LI:199121.14:2001MAY17 1158 forward 2 TM Non-Cytosolic 248 LI:199121.14:2001MAY17 1182 forward 2 TM Non-Cytosolic 248 LI:199121.14:2001MAY17 1202 f224 forward 2 TM Non-Cytosolic 248 LI:199121.14:2001MAY17 1225 f243 forward 2 TM Formarmbrane 248 LI:199121.14:2001MAY17 1267 f286 forward 3 TM Non-Cytosolic 248 LI:199121.14:2001MAY17 726 forward 3 TM Non-Cytosolic 248 LI:199121.14:2001MAY17 726 forward 3 TM Formarmbrane 248 LI:199121.14:2001MAY17 726 forward 3 TM Formarmbrane 248 LI:19912.14:2001MAY17 726 forward 3 TM Formarmbrane <	SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
248	248	U:199121.14:2001MAY17	861	880 forward 1	TM	Transmembrane
248 Li:199121.14:2001MAY17 1249 1268 forward 1 TM Transmembrane Cytosolic 248 Li:199121.14:2001MAY17 1 1158 forward 2 TM Non-Cytosolic 248 Li:199121.14:2001MAY17 1159 forward 2 TM Non-Cytosolic 248 Li:199121.14:2001MAY17 1182 loof forward 2 TM Cytosolic 248 Li:199121.14:2001MAY17 1202 loof forward 2 TM Non-Cytosolic 248 Li:199121.14:2001MAY17 1225 loof forward 2 TM Non-Cytosolic 248 Li:199121.14:2001MAY17 1247 loof forward 2 TM Non-Cytosolic 248 Li:199121.14:2001MAY17 1267 loof forward 3 TM Non-Cytosolic 248 Li:199121.14:2001MAY17 726 loof forward 3 TM Transmembrane 248 Li:199121.14:2001MAY17 976 loof forward 3 TM Transmembrane 248 Li:199121.14:2001MAY17 976 loof forward 3 TM Non-Cytosolic 248 Li:199121.14:2001MAY17 1052 loof forward 3 TM Transmembrane	248	U:199121.14:2001MAY17	881	1248 forward 1	TM	Non-Cytosolic
248	248	U:199121.14:2001MAY17	1249	1268 forward 1	TM	•
248 L!199121.14:2001MAY17 1 1158 forward 2 TM Non-Cytosolic 248 L!199121.14:2001MAY17 1159 1181 forward 2 TM Transmembrane 248 L!199121.14:2001MAY17 1182 1201 forward 2 TM Transmembrane 248 L!199121.14:2001MAY17 1225 1243 forward 2 TM Non-Cytosolic 248 L!199121.14:2001MAY17 1226 forward 2 TM Cytosolic 248 L!199121.14:2001MAY17 1267 1286 forward 2 TM Cytosolic 248 L!199121.14:2001MAY17 725 745 forward 3 TM Cytosolic 248 L!199121.14:2001MAY17 726 745 forward 3 TM Cytosolic 248 L!199121.14:2001MAY17 746 952 forward 3 TM Cytosolic 248 L!199121.14:2001MAY17 975 975 forward 3 TM Cytosolic 248 L!199121.14:2001MAY17 1022 1051 forward 3 TM Transmembrane 248 L!199121.14:2001MAY17 1052 1074 forward 3 TM Transmembrane 248 L!199121.14:2001MAY17	248	U:199121.14:2001MAY17	1269	1286 forward 1	TM	Cytosolic
248	248	U:199121.14:2001MAY17	1	1158 forward 2	TM .	•
248 U:199121.14:2001MAY17 1182 1201 forward 2 TM Cytosollc 248 U:199121.14:2001MAY17 1202 1224 forward 2 TM Non-Cytosollc 248 U:199121.14:2001MAY17 1224 1236 forward 2 TM Non-Cytosollc 248 U:199121.14:2001MAY17 1247 1286 forward 2 TM Cytosollc 248 U:199121.14:2001MAY17 725 745 forward 3 TM Non-Cytosollc 248 U:199121.14:2001MAY17 726 745 forward 3 TM Non-Cytosollc 248 U:199121.14:2001MAY17 726 952 forward 3 TM Cytosollc 248 U:199121.14:2001MAY17 953 975 forward 3 TM Cytosollc 248 U:199121.14:2001MAY17 976 998 forward 3 TM Transmembrane 248 U:199121.14:2001MAY17 1052 1074 forward 3 TM Transmembrane 248 U:199121.14:2001MAY17 1075 1162 forward 3 TM Non-Cytosolic 248 U:19	248		1159	1181 forward 2	TM	•
248 L:199121.14:2001MAY17 1202 1224 forward 2 TM Transmembrane 248 L:199121.14:2001MAY17 1225 1243 forward 2 TM Non-Cytosolic 248 L:199121.14:2001MAY17 1267 1286 forward 2 TM Cytosolic 248 L:199121.14:2001MAY17 1 725 forward 3 TM Non-Cytosolic 248 L:199121.14:2001MAY17 726 745 forward 3 TM Non-Cytosolic 248 L:199121.14:2001MAY17 746 952 forward 3 TM Non-Cytosolic 248 L:199121.14:2001MAY17 953 975 forward 3 TM Non-Cytosolic 248 L:199121.14:2001MAY17 976 998 forward 3 TM Non-Cytosolic 248 L:199121.14:2001MAY17 1022 1051 forward 3 TM Non-Cytosolic 248 L:199121.14:2001MAY17 1052 1074 forward 3 TM Transmembrane 248 L:199121.14:2001MAY17 1163 1181 forward 3 TM Transmembrane 248						
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249 LI:202630.5:2001MAY17 379 397 forward 2 TM Non-Cytosolic 249 LI:202630.5:2001MAY17 398 420 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 421 440 forward 2 TM Cytosolic 249 LI:202630.5:2001MAY17 441 463 forward 2 TM Non-Cytosolic 249 LI:202630.5:2001MAY17 486 508 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 509 528 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 509 528 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 509 528 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 251 LI:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 LI:2051						•
249 U:202630.5:2001MAY17 398 420 forward 2 TM Transmembrane 249 U:202630.5:2001MAY17 421 440 forward 2 TM Cytosolic 249 U:202630.5:2001MAY17 441 463 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 464 485 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Transmembrane 249 U:202630.5:2001MAY17 509 528 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Non-Cytosolic 250 U:2034488.1:2001MAY17 552 740 forward 2 TM Non-Cytosolic 251 U:2034488.1:2001MAY17 387 409 forward 2 TM Cytosolic 251 U:2051434.8:2001MAY17 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>						
249 U:202630.5:2001MAY17 421 440 forward 2 TM Cytosolic 249 U:202630.5:2001MAY17 441 463 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 464 485 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Transmembrane 249 U:202630.5:2001MAY17 509 528 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 U:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 251 U:2034488.1:2001MAY17 387 409 forward 2 TM Cytosolic 251 U:2051434.8:2001MAY17						
249 U:202630.5:2001MAY17 441 463 forward 2 TM Transmembrane 249 U:202630.5:2001MAY17 464 485 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 486 508 forward 2 TM Cytosolic 249 U:202630.5:2001MAY17 509 528 forward 2 TM Cytosolic 249 U:202630.5:2001MAY17 529 551 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 249 U:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 U:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 250 U:2034488.1:2001MAY17 387 409 forward 2 TM Cytosolic 251 U:2034488.1:2001MAY17 410 424 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17						
249 LI:202630.5:2001MAY17 464 485 forward 2 TM Non-Cytosolic 249 LI:202630.5:2001MAY17 486 508 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 509 528 forward 2 TM Cytosolic 249 LI:202630.5:2001MAY17 529 551 forward 2 TM Non-Cytosolic 249 LI:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 387 409 forward 2 TM Transmembrane 250 LI:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 LI:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 LI:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 676 698 forward 3 TM<						•
249 LI:202630.5:2001MAY17 486 508 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 509 528 forward 2 TM Cytosolic 249 LI:202630.5:2001MAY17 529 551 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 387 409 forward 2 TM Transmembrane 250 LI:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 LI:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 631 652 forward 1 TM Transmembrane 251 LI:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 676 698 forward 3 TM Non-Cytosolic 251 LI:20						
249 LI:202630.5:2001MAY17 509 528 forward 2 TM Cytosolic 249 LI:202630.5:2001MAY17 529 551 forward 2 TM Transmembrane 249 LI:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 387 409 forward 2 TM Cytosolic 251 LI:2034488.1:2001MAY17 410 424 forward 2 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 LI:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 LI:2051434						•
249 U:202630.5:2001MAY17 529 551 forward 2 TM Transmembrane 249 U:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 U:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 250 U:2034488.1:2001MAY17 387 409 forward 2 TM Cytosolic 250 U:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 U:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 608 630 forward 1 TM Cytosolic 251 U:2051434.8:2001MAY17 631 652 forward 1 TM Transmembrane 251 U:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 U:2051434.8:2001MAY17<						
249 LI:202630.5:2001MAY17 552 740 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 387 409 forward 2 TM Transmembrane 250 LI:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 LI:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 608 630 forward 1 TM Cytosolic 251 LI:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 LI:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						•
250 LI:2034488.1:2001MAY17 1 386 forward 2 TM Non-Cytosolic 250 LI:2034488.1:2001MAY17 387 409 forward 2 TM Transmembrane 250 LI:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 LI:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 608 630 forward 1 TM Transmembrane 251 LI:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 LI:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						
250 LI:2034488.1:2001MAY17 387 409 forward 2 TM Transmembrane 250 LI:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 LI:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 608 630 forward 1 TM Transmembrane 251 LI:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 LI:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						•
250 U:2034488.1:2001MAY17 410 424 forward 2 TM Cytosolic 251 U:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 608 630 forward 1 TM Transmembrane 251 U:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 U:2051434.8:2001MAY17 653 675 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane			-			*
251 U:2051434.8:2001MAY17 1 607 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 608 630 forward 1 TM Transmembrane 251 U:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 U:2051434.8:2001MAY17 653 675 forward 1 TM Transmembrane 251 U:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						
251 LI:2051434.8:2001MAY17 608 630 forward 1 TM Transmembrane 251 LI:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 LI:2051434.8:2001MAY17 653 675 forward 1 TM Transmembrane 251 LI:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						· · · · · · · · · · · · · · · · · · ·
251 U:2051434.8:2001MAY17 631 652 forward 1 TM Cytosolic 251 U:2051434.8:2001MAY17 653 675 forward 1 TM Transmembrane 251 U:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane			•			•
251 U:2051434.8:2001MAY17 653 675 forward 1 TM Transmembrane 251 U:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						
251 U:2051434.8:2001MAY17 676 698 forward 1 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 U:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						•
251 LI:2051434.8:2001MAY17 1 553 forward 3 TM Non-Cytosolic 251 LI:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane						
251 LI:2051434.8:2001MAY17 554 576 forward 3 TM Transmembrane			676			Non-Cytosolic
			•	553 forward 3		Non-Cytosolic
251 LI:2051434.8:2001MAY17 577 651 forward 3 TM Cytosolic				576 forward 3		
	251	LI:2051434.8:2001MAY17	577	651 forward 3	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
251	LI:2051434.8:2001MAY17	652	674 forward 3	TM	Transmembrane
251	LI:2051434.8:2001MAY17	675	697 forward 3	TM	Non-Cytosolic
252	LI:2118475.9:2001MAY17	1	432 forward 1	TM	Non-Cytosolic
252	LI:2118475.9:2001MAY17	433	455 forward 1	TM	Transmembrane
252	LI:2118475.9:2001MAY17	456	456 forward 1	TM	Cytosolic
252	Ц:2118475.9:2001MAY17	1	431 forward 3	TM	Non-Cytosolic
252	LI:2118475.9:2001MAY17	432	454 forward 3	TM	Transmembrane
252	LI:2118475.9:2001MAY17	455	456 forward 3	TM	Cytosolic
253	U:218849.24:2001MAY17	1	1133 forward 1	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	1134	1156 forward 1	TM	Transmembrane
253	LI:218849.24:2001MAY17	1157	1167 forward 1	TM	Cytosolic
253	LI:218849.24:2001MAY17	1168	1190 forward 1	TM	Transmembrane
253	LI:218849.24:2001MAY17	1191	1193 forward 1	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	1194	1213 forward 1	TM	Transmembrane
253	LI:218849.24:2001MAY17	1214	1293 forward 1	TM	Cytosolic
253	LI:218849.24:2001MAY17	1294	1316 forward 1	TM	Transmembrane
253	LI:218849.24:2001MAY17	1317	1350 forward 1	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	1351	1373 forward 1	TM	Transmembrane
253	LI:218849.24:2001MAY17	1374	1385 forward 1	TM	Cytosolic
253	LI:218849.24:2001MAY17	1386	1408 forward 1	TM	Transmembrane
253	LI:218849.24:2001MAY17	1409	1493 forward 1	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	.1	211 forward 2	TM	Cytosolic
253	LI:218849.24:2001MAY17	· · 212	234 forward 2	TM	Transmembrane
. 253	LI:218849.24:2001MAY17	235	286 forward 2	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	287	309 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17	- 310	321 forward 2	TM	Cytosolic
253	LI:218849.24:2001MAY17	322	344 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17	345	369 forward 2	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	370	392 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17	393	466 forward 2	TM	Cytosolic
253	LI:218849.24:2001MAY17	467	489 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17	490	503 forward 2	· TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	504	526 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17	527	537 forward 2	TM	Cytosolic
253	LI:218849.24:2001MAY17	538	560 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17	561	658 forward 2	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	659	681 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17	682	745 forward 2	TM	Cytosolic
253	LI:218849.24:2001MAY17	746	768 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17		1190 forward 2	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17		1213 forward 2	TM	Transmembrane
253	LI:218849.24:2001MAY17		1291 forward 2	TM	Cytosolic
253 .	LI:218849.24:2001MAY17	1292	1314 forward 2	TM	Transmembrane
253	U:218849.24:2001MAY17		1350 forward 2	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17		1373 forward 2	TM	Transmembrane
253	U:218849.24:2001MAY17		1392 forward 2	TM	Cytosolic
253	U:218849.24:2001MAY17	1393	1415 forward 2	TM	Transmembrane
253	⊔:218849.24:2001MAY17	1416	1493 forward 2	TM	Non-Cytosolic
253	U:218849.24:2001MAY17	1	1404 forward 3	TM	Non-Cytosolic
253	LI:218849.24:2001MAY17	1405	1427 forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
253	LI:218849.24:2001MAY17	1428	1492 forward 3	TM	Cytosolic
254	U:2199824.5:2001MAY17	1	27 forward 2	TM	Cytosolic
254	LI:2199824.5:2001MAY17	28	45 forward 2	TM	Transmembrane
254	LI:2199824.5:2001MAY17	46	623 forward 2	TM	Non-Cytosolic
254	LI:2199824.5:2001MAY17	1	594 forward 3	TM	Non-Cytosolic
254	LI:2199824.5:2001MAY17	595	617 forward 3	TM	Transmembrane
254	LI:2199824.5:2001MAY17	618	623 forward 3	TM	Cytosolic
255	LI:233018.32:2001MAY17	1	872 forward 1	TM	Non-Cytosolic
255	LI:233018.32:2001MAY17	873	895 forward 1	TM	Transmembrane
255	LI:233018.32:2001MAY17	896	907 forward 1	TM	Cytosolic
255	LI:233018.32:2001MAY17	908	927 forward 1	TM	Transmembrane
255	LI:233018.32:2001MAY17	928	1420 forward 1	TM	Non-Cytosolic
255	LI:233018.32:2001MAY17	1	784 forward 2	TM	Non-Cytosolic
255	LI:233018.32:2001MAY17	785	807 forward 2	TM	Transmembrane
255	LI:233018.32:2001MAY17	808	854 forward 2	TM	Cytosolic
255	LI:233018.32:2001MAY17	855	877 forward 2	TM	Transmembrane
255	U:233018.32:2001MAY17	878	891 forward 2	TM	Non-Cytosolic
255	LI:233018.32:2001MAY17	892	914 forward 2	TM	Transmembrane
255	LI:233018.32:2001MAY17	915	1033 forward 2	TM	Cytosolic
255	LI:233018.32:2001MAY17		1056 forward 2	TM	Transmembrane
255	LI:233018.32:2001MAY17	1057	1420 forward 2	TM	Non-Cytosolic
255	LI:233018.32:2001MAY17	1	545 forward 3	TM	Non-Cytosolic
255	LI:233018.32:2001MAY17	546.	568 forward 3	TM	Transmembrane
255	LI:233018.32:2001MAY17	569	606 forward 3	TM	Cytosolic ·
255	U:233018.32:2001МАY17	607	629 forward 3	TM	Transmembrane
255	LI:233018.32:2001MAY17	630	1420 forward 3	TM	Non-Cytosolic
256	LI:236295.8:2001MAY17	1	91 forward 3	TM	Cytosolic
256	LI:236295.8:2001MAY17	. 92	114 forward 3	TM	Transmembrane
256	LI:236295.8:2001MAY17	115	183 forward 3	TM	Non-Cytosolic
256	LI:236295.8:2001MAY17	184	202 forward 3	TM	Transmembrane
256	U:236295.8:2001MAY17	203	429 forward 3	TM	Cytosolic
257	LI:286989.14:2001MAY17	1	677 forward 1	TM	Non-Cytosolic
257 257	LI:286989.14:2001MAY17	678	700 forward 1	TM	Transmembrane
257 257	LI:286989.14:2001MAY17	701	706 forward 1	TM	
257 257	LI:286989.14:2001MAY17	707	729 forward 1	TM	Cytosolic Transmembrane
257 257	LI:286989.14:2001MAY17	730	776 forward 1	TM	Non-Cytosolic
257 257	LI:286989.14:2001MAY17	777	779 forward 1	TM	Transmembrane
257 257	LI:286989.14:2001MAY17	800	969 forward 1	TM	Cytosolic
257 257	U:286989.14:2001МАY17	970	992 forward 1	TM	Transmembrane
257 257	LI:286989.14:2001MAY17	993	1006 forward 1	TM	Non-Cytosolic
257 257	LI:286989.14:2001MAY17	1007	1009 forward 1	TM	Transmembrane
257 257	U:286989.14:2001МАY17		1048 forward 1	TM	Cytosolic
257 257	L:286989.14:2001MAY17		1071 forward 1	TM	•
257 257	U:286989.14:2001МАY17		1085 forward 1	TM	Transmembrane
257 257	LI:286989.14:2001MAY17				Non-Cytosolic
	LI:286989.14:2001MAY17		1105 forward 1	TM TA 4	Transmembrane
257 257	L:286989.14:2001MAY17		1116 forward 1	TM	Cytosolic
257 257			1139 forward 1	TM	Transmembrane
257	LI:286989.14:2001MAY17	_	1203 forward 1	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17]	348 forward 2	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17	349	371 forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
257	U:286989.14:2001MAY17	372	664 forward 2	TM	Cytosolic
257	U:286989.14:2001MAY17	665	687 forward 2	TM	Transmembrane
257	LI:286989.14:2001MAY17	688	706 forward 2	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17	707	729 forward 2	TM	Transmembrane
257	U:286989.14:2001MAY17	730	777 forward 2	TM	Cytosolic
257	LI:286989.14:2001MAY17	778	800 forward 2	TM	Transmembrane
257	U:286989.14:2001MAY17	801	854 forward 2	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17	855	877 forward 2	TM	Transmembrane
257	LI:286989.14:2001MAY17	878	1001 forward 2	TM	Cytosolic
257	LI:286989.14:2001MAY17		1024 forward 2	TM	Transmembrane
257	LI:286989.14:2001MAY17		1086 forward 2	TM	Non-Cytosolic
257	U:286989.14:2001MAY17		1109 forward 2	TM	Transmembrane
257	LI:286989.14:2001MAY17		1115 forward 2	TM	Cytosolic
257	LI:286989.14:2001MAY17		1138 forward 2	TM	Transmembrane
257	LI:286989.14:2001MAY17		1141 forward 2	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17		1164 forward 2	TM	Transmembrane
257	LI:286989.14:2001MAY17		1202 forward 2	TM	Cytosolic
257	LI:286989.14:2001MAY17	1	656 forward 3	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17	657	688 forward 3	TM	Transmembrane
257	LI:286989.14:2001MAY17	689	707 forward 3	TM	Cytosolic
257	U:286989.14:2001MAY17	708	729 forward 3	TM	Transmembrane
257	LI:286989.14:2001MAY17	730	778 forward 3	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17	779	798 forward 3	TM	Transmembrane
257	LI:286989.14:2001MAY17	779	827 forward 3	TM	Cytosolic
257	LI:286989.14:2001MAY17	828	850 forward 3	TM	Transmembrane
257	LI:286989.14:2001MAY17	851	882 forward 3	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17	883	905 forward 3	TM .	Transmembrane
257	L:286989.14:2001MAY17	906	966 forward 3	TM	Cytosolic
257	LI:286989.14:2001MAY17	967	989 forward 3	TM	Transmembrane
257	U:286989.14:2001МАY17	990	1074 forward 3	TM	Non-Cytosolic
257	LI:286989.14:2001MAY17		1097 forward 3	TM	Transmembrane
257 257	LI:286989.14:2001MAY17		1101 forward 3	TM	Cytosolic
257 257	LI:286989.14:2001MAY17		1119 forward 3	TM	Transmembrane
257	LI:286989.14:2001MAY17		1123 forward 3	TM	
257 257	LI:286989.14:2001MAY17		1125 forward 3	TM	Non-Cytosolic Transmembrane
257	LI:286989.14:2001MAY17		1202 forward 3	TM	Cytosolic
258	LI:345320.4:2001MAY17	1147	1488 forward 1	TM	Non-Cytosolic
258	L:345320.4:2001MAY17	1480	1511 forward 1	TM	Transmembrane
258	LI:345320.4:2001MAY17		1517 forward 1	TM	Cytosolic
258	LI:345320.4:2001MAY17		1540 forward 1	TM	Transmembrane
258	LI:345320.4:2001МАY17		1660 forward 1	TM	
258	LI:345320.4:2001MAY17		1683 forward 1	TM	Non-Cytosolic
258	Ц:345320.4:2001MAY17		1776 forward 1	TM	Transmembrane
258	L:345320.4:2001MAY17		1779 forward 1	TM	Cytosolic
258 258	L:345320.4:2001MAY17		=		Transmembrane
258 258	L:345320.4:2001MAY17	1000	2093 forward 1	TM	Non-Cytosolic
	LI:345320.4:2001MAY17	! 7	6 forward 2	TM	Cytosolic
258		7	29 forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	30	642 forward 2	TM	Non-Cytosolic
258	LI:345320.4:2001MAY17	643	665 forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	666	1168 forward 2	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
258	LI:345320.4:2001MAY17	1169	1191	forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	1192	1274	forward 2	TM	Non-Cytosolic
258	LI:345320.4:2001MAY17	1275	1297	forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	1298	1431	forward 2	TM	Cytosolic
258	LI:345320.4:2001MAY17	1432	1454	forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	1455	1501	forward 2	TM	Non-Cytosolic
258	LI:345320.4:2001MAY17	1502	1524	forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	1525	1649	forward 2	TM	Cytosolic
258	LI:345320.4:2001MAY17	1650	1672	forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17			forward 2	TM	Non-Cytosolic
258	LI:345320.4:2001MAY17	1708	1730	forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	1731		forward 2	TM	Cytosolic
258	LI:345320.4:2001MAY17	1768	1790	forward 2	TM	Transmembrane
258	LI:345320.4:2001MAY17	1791	2093	forward 2	TM	Non-Cytosolic
258	LI:345320.4:2001MAY17	1	6	forward 3	TM	Cytosolic
258	LI:345320.4:2001MAY17	7	24	forward 3	TM	Transmembrane
258	LI:345320.4:2001MAY17	25	1409	forward 3	TM	Non-Cytosolic
258	LI:345320.4:2001MAY17	1410	1432	forward 3	TM	Transmembrane
258	LI:345320.4:2001MAY17	1433	1436	forward 3	TM	Cytosolic
258	LI:345320.4:2001MAY17	1437	1459	forward 3	TM	Transmembrane
258	LI:345320.4:2001MAY17	1460	1659	forward 3	TM	Non-Cytosolic
258	LI:345320.4:2001MAY17	1660	1682	forward 3	TM	Transmembrane
258	LI:345320.4:2001MAY17	1683	1752	forward 3	TM	Cytosolic
258	LI:345320.4:2001MAY17	1753	1775	forward 3	TM	Transmembrane
258	LI:345320.4:2001MAY17	1776	2092	forward 3	TM	Non-Cytosolic
259	LI:355693.18:2001MAY17	1	1472	forward 1	TM	Non-Cytosolic
259	LI:355693.18:2001MAY17	1473	1495	forward 1	TM	Transmembrane
259	LI:355693.18:2001MAY17	1496	2222	forward 1	TM	Cytosolic
259	LI:355693.18:2001MAY17	2223	2245	forward 1	TM	Transmembrane
259	LI:355693.18:2001MAY17	2246	2273	forward 1	TM	Non-Cytosolic
259	LI:355693.18:2001MAY17	2274	2296	forward 1	TM	Transmembrane
259	LI:355693.18:2001MAY17	2297	2378	forward 1	TM	Cytosolic
259	LI:355693.18:2001MAY17	1	2273	forward 3	TM	Non-Cytosolic
259	LI:355693.18:2001MAY17	2274	2296	forward 3	TM	Transmembrane
259	LI:355693.18:2001MAY17	2297	2378	forward 3	TM	Cytosolic
260	LI:359876.1:2001MAY17	1	585	forward 1	TM	Non-Cytosolic
260	U:359876.1:2001MAY17	586	605	forward 1	TM	Transmembrane
260	LI:359876.1:2001MAY17	606	630	forward 1	TM	Cytosolic
260	LI:359876.1:2001MAY17	631	653	forward 1	TM	Transmembrane
260	U:359876.1:2001MAY17	654		forward 1	TM	Non-Cytosolic
260	LI:359876.1:2001MAY17	658	677	forward 1	TM	Transmembrane
260	LI:359876.1:2001MAY17	678	741	forward 1	TM	Cytosolic
260	LI:359876.1:2001MAY17	742	764	forward 1	TM	Transmembrane
260	U:359876.1:2001MAY17	765		forward 1	TM	Non-Cytosolic
260	U:359876.1:2001MAY17]		forward 2	TM	Non-Cytosolic
260	U:359876.1:2001MAY17	192		forward 2	TM	Transmembrane
260	U:359876.1:2001MAY17	215		forward 2	TM	Cytosolic
260	LI:359876.1:2001MAY17	226		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	249		forward 2	TM	Non-Cytosolic
260	L:359876.1:2001MAY17	263	285	forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
260	Ц:359876.1:2001MAY17	286	•	forward 2	TM	Cytosolic
260	LI:359876.1:2001MAY17	306	328	forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	329	361	forward 2	TM	Non-Cytosolic
260	LI:359876.1:2001MAY17	362	384	forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	385		forward 2	TM	Cytosolic
260	LI:359876.1:2001MAY17	405		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	428		forward 2	TM	Non-Cytosolic
260	LI:359876.1:2001MAY17	437		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	457	534	forward 2	TM	Cytosolic
260	LI:359876.1:2001MAY17	535		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	558		forward 2	TM	Non-Cytosolic
260	LI:359876.1:2001MAY17	586		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	606		forward 2	TM	Cytosolic
260	LI:359876.1:2001MAY17	618		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	638		forward 2	TM	Non-Cytosolic
260	Ц:359876.1:2001MAY17	657		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	680		forward 2	TM ·	Cytosolic
260	LI:359876.1:2001MAY17	740		forward 2	TM	Transmembrane
260	LI:359876.1:2001MAY17	763		forward 2	TM	Non-Cytosolic
260	U:359876.1:2001MAY17	1		forward 3	TM	Non-Cytosolic
260	LI:359876.1:2001MAY17	369		forward 3	TM	Transmembrane
260	U:359876.1:2001MAY17	392		forward 3	TM	Cytosolic
. 260	LI:359876.1:2001MAY17	617		forward 3	TM	Transmembrane
260	LJ:359876.1:2001MAY17	640		forward 3	TM	Non-Cytosolic
260	LI:359876.1:2001MAY17	649		forward 3	TM	Transmembrane
260	LI:359876.1:2001MAY17	672		forward 3	TM	Cytosolic
260	LI:359876.1:2001MAY17	706		forward 3	TM	Transmembrane
260	LI:359876.1:2001MAY17	726		forward 3	TM	Non-Cytosolic
260	LI:359876.1:2001MAY17	735		forward 3	TM	Transmembrane
260	Ц:359876.1:2001MAY17	758		forward 3	TM	Cytosolic
260	LI:359876.1:2001MAY17	836		forward 3	TM	Transmembrane
260	LI:359876.1:2001MAY17	856		forward 3	TM	Non-Cytosolic
260	U:359876.1:2001MAY17	870		forward 3	TM	Transmembrane
260	LI:359876.1:2001MAY17	893		forward 3	TM	Cytosolic
261	LI:406664.32:2001MAY17	1		forward 1	TM	Non-Cytosolic
261	LI:406664.32;2001MAY17	706	728	forward 1	TM	Transmembrane
261	LI:406664.32:2001MAY17	729	951	forward 1	TM	Cytosolic
261	LI:406664.32:2001MAY17	952	974	forward 1	TM	Transmembrane
261	LI:406664.32:2001MAY17	975	977	forward 1	TM	Non-Cytosolic
261	LI:406664.32:2001MAY17	978		forward 1	TM	Transmembrane
261	LI:406664.32:2001MAY17	998	1017	forward 1	TM	Cytosolic
261	LI:406664.32:2001MAY17	1018		forward 1	TM	Transmembrane
261	LI:406664.32:2001MAY17	1041		forward 1	TM	Non-Cytosolic
261	LI:406664.32:2001MAY17			forward 1	TM	Transmembrane
261	LI:406664.32:2001MAY17			forward 1	TM	Cytosolic
261	LJ:406664.32:2001MAY17	1		forward 2	TM	Non-Cytosolic
261	LI:406664.32:2001MAY17	952		forward 2	TM	Transmembrane
261	LI:406664.32:2001MAY17	975		forward 2	TM	Cytosolic
261	LI:406664.32:2001MAY17			forward 2	TM	Transmembrane
261	LI:406664.32:2001MAY17			forward 2	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
261	LI:406664.32:2001MAY17	1114	1136 forward 2	TM	Transmembrane
261	LI:406664.32:2001MAY17	1137	1166 forward 2	TM	Cytosolic
261	LI:406664.32:2001MAY17	1 ·	704 forward 3	TM	Non-Cytosolic
261	LI:406664.32:2001MAY17	705	727 forward 3	TM	Transmembrane
261	LI:406664.32:2001MAY17	728	910 forward 3	TM	Cytosolic
261	LI:406664.32:2001MAY17	911	930 forward 3	TM	Transmembrane
261	LI:406664.32:2001MAY17	931	1027 forward 3	TM	Non-Cytosolic
261	LI:406664.32:2001MAY17	1028	1050 forward 3	TM	Transmembrane
261	LI:406664.32:2001MAY17	1051	1069 forward 3	TM	Cytosolic
261	LI:406664.32:2001MAY17	1070	1092 forward 3	TM	Transmembrane
261	LI:406664.32:2001MAY17	1093	1111 forward 3	TM	Non-Cytosolic
261	LI:406664.32:2001MAY17	1112	1134 forward 3	TM	Transmembrane
261	LI:406664.32:2001MAY17		1166 forward 3	TM	Cytosolic
262	LI:410324.1:2001MAY17	1	1308 forward 1	TM	Non-Cytosolic
262	LI:410324.1:2001MAY17	1309	1331 forward 1	TM	Transmembrane
262	LI:410324.1:2001MAY17		1351 forward 1	TM	Cytosolic
	LI:410324.1:2001MAY17		1374 forward 1	TM	Transmembrane
262	LI:410324.1:2001MAY17		1419 forward 1	TM	Non-Cytosolic
262	LI:410324.1:2001MAY17	1	59 forward 2	TM	Cytosolic
262	U:410324.1:2001MAY17	60	82 forward 2	TM	Transmembrane
262	L:410324.1:2001MAY17	83	1006 forward 2	TM	Non-Cytosolic
262	LI:410324.1:2001MAY17	1007	1029 forward 2	TM	Transmembrane
262	U:410324.1:2001MAY17		1194 forward 2		Cytosolic
262	U:410324.1:2001MAY17		1217 forward 2	TM.	Transmembrane
262	LI:410324.1:2001MAY17		1236 forward 2	•	Non-Cytosolic
262	LI:410324.1:2001MAY17			···TM	Transmembrane
262	LI:410324.1:2001MAY17		1335 forward 2	TM	Cytosolic
262	LI:410324.1:2001MAY17		1358 forward 2	TM	Transmembrane
262	LI:410324.1:2001MAY17		1419 forward 2		Non-Cytosolic
262	LI:410324.1:2001MAY17	1	62 forward 3	: TM	Cytosolic
262	LI:410324.1:2001MAY17	63	85 forward 3	TM	Transmembrane
262	LI:410324.1:2001MAY17	86	1194 forward 3	TM	Non-Cytosolic
262	LI:410324.1:2001MAY17	•	1217 forward 3	TM	Transmembrane
262	LI:410324.1:2001MAY17		1335 forward 3	TM	Cytosolic
262	LI:410324.1:2001MAY17		1358 forward 3	TM	Transmembrane
262	LI:410324.1:2001MAY17		1361 forward 3	TM	Non-Cytosolic
262	LI:410324.1:2001MAY17		1384 forward 3	TM	Transmembrane
262	LI:410324.1:2001MAY17		1418 forward 3	TM	Cytosolic
263	LI:414376.12:2001MAY17	1	464 forward 2	TM	Non-Cytosolic
263	LI:414376.12:2001MAY17	465	487 forward 2	TM	Transmembrane
263	LI:414376.12:2001MAY17	488	542 forward 2	TM	Cytosolic
263	LI:414376.12:2001MAY17		565 forward 2	TM	Transmembrane
263	U:414376.12:2001MAY17	566	579 forward 2	TM	Non-Cytosolic
263	LI:414376.12:2001MAY17	580	602 forward 2	TM	Transmembrane
263	LI:414376.12:2001MAY17	603	664 forward 2	TM	Cytosolic
263	LI:414376.12:2001MAY17	665	687 forward 2	TM	Transmembrane
263	LI:414376.12:2001MAY17	688	701 forward 2	TM	Non-Cytosolic
263	LI:414376.12:2001MAY17	702	720 forward 2	TM	Transmembrane
263	LI:414376.12:2001MAY17	721	726 forward 2	TM	Cytosolic
263	LI:414376.12:2001MAY17	727	749 forward 2	TM	Transmembrane
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SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
263	LI:414376.12:2001MAY17	750	1999 forward 2	TM	Non-Cytosolic
264	LI:452089.1:2001MAY17	1	238 forward 1	TM	Non-Cytosolic
264	Ц:452089.1:2001MAY17	239	261 forward 1	TM	Transmembrane
264	LI:452089.1:2001MAY17	262	312 forward 1	TM	Cytosolic
264	LI:452089.1:2001MAY17	1	283 forward 2	TM	Non-Cytosolic
264	LI:452089.1:2001MAY17	284	306 forward 2	TM	Transmembrane
264	LI:452089.1:2001MAY17	307	312 forward 2	TM	Cytosolic
264	LI:452089.1:2001MAY17	1	237 forward 3	TM	Cytosolic
264	LI:452089.1:2001MAY17	238	260 forward 3	TM	Transmembrane
264	LI:452089.1:2001MAY17	261	283 forward 3	TM	Non-Cytosolic
264	LI:452089.1:2001MAY17	284	306 forward 3	TM	Transmembrane
264	LI:452089.1:2001MAY17	307	311 forward 3	TM	Cytosolic
265	LI:481614.43:2001MAY17	1	1525 forward 1	TM	Non-Cytosolic
265	LI:481614.43:2001MAY17	1526	1548 forward 1	TM	Transmembrane
265	LI:481614.43:2001MAY17	1549	1660 forward 1	TM	Cytosolic
266	LI:809605.2:2001MAY17	1	81 forward 2	TM	Non-Cytosolic
266	U:809605.2:2001MAY17	82	104 forward 2	TM	Transmembrane
266	LI:809605.2:2001MAY17	105	137 forward 2	TM	Cytosolic
266	LI:809605.2:2001MAY17	138	160 forward 2	TM	Transmembrane
266	LI:809605.2:2001MAY17	161	880 forward 2	TM	Non-Cytosolic
267	LI:816437.25:2001MAY17	1	605 forward 1	TM	Non-Cytosolic
267	LI:816437.25:2001MAY17	606	625 forward 1	TM	Transmembrane
· 267	LI:816437.25:2001MAY17	626	679 forward 1	·TM	Cytosolic
. 267	LI:816437.25:2001MAY17	680	702 forward 1	·TM	Transmembrane
267	LI:816437.25:2001MAY17	703	859 forward 1	'TM	Non-Cytosolic
267	LI:816437.25:2001MAY17	860	882 forward 1	. 'TM	Transmembrane
267	LI:816437.25:2001MAY17	883	1250 forward 1	. TM	Cytosolic
268	LI:817827.5:2001MAY17	1	244 forward 1	TM	Non-Cytosolic
268	LI:817827.5:2001MAY17	245	264 forward 1	TM	Transmembrane
268	LI:817827.5:2001MAY17	· 265	272 forward 1	· TM	Cytosolic
268	LI:817827.5:2001MAY17	1	240 forward 2	TM	Non-Cytosolic
268	LI:817827.5:2001MAY17	241	263 forward 2	TM	Transmembrane
268	LI:817827.5:2001MAY17	264	271 forward 2	TM	Cytosolic
268	LI:817827.5:2001MAY17	1	235 forward 3	TM	Non-Cytosolic
268	LI:817827.5:2001MAY17	236	258 forward 3	TM	Transmembrane
268	LI:817827.5:2001MAY17	259	271 forward 3	TM	Cytosolic
269	LI:002345.15:2001MAY17	1	601 forward 1	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	602	624 forward 1	TM	Transmembrane
269	LI:002345.15:2001MAY17	625	946 forward 1	TM	Cytosolic
269	LI:002345.15:2001MAY17	947	969 forward 1	TM	Transmembrane
269	LI:002345.15:2001MAY17	970	1282 forward 1	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17		1300 forward 1	TM	Transmembrane
269	LI:002345.15:2001MAY17	1301	1307 forward 1	TM	Cytosolic
269	LI:002345.15:2001MAY17	1	601 forward 2	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	602	624 forward 2	TM	Transmembrane
269	LI:002345.15:2001MAY17	625	636 forward 2	TM	Cytosolic
269	LI:002345.15:2001MAY17	637	654 forward 2	TM	Transmembrane
269	LI:002345.15:2001MAY17	655	663 forward 2	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	664	681 forward 2	TM	Transmembrane
269	LI:002345.15:2001MAY17	682	741 forward 2	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
269	LI:002345.15:2001MAY17	742	764 forward 2	TM	Transmembrane
269	U:002345.15:2001MAY17	765	814 forward 2	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	815	837 forward 2	TM	Transmembrane
269	U:002345.15:2001MAY17	838	864 forward 2	TM	Cytosolic
269	LI:002345.15:2001MAY17	865	887 forward 2	TM	Transmembrane
269	LI:002345.15:2001MAY17	888	1117 forward 2	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	1118	1140 forward 2	TM	Transmembrane
269	LI:002345.15:2001MAY17	1141	1224 forward 2	TM	Cytosolic
269	LI:002345.15:2001MAY17	1225	1247 forward 2	TM	Transmembrane
269	U:002345.15:2001MAY17		1279 forward 2	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	1280	1299 forward 2	TM	Transmembrane
269	U:002345.15:2001MAY17	1300	1307 forward 2	TM	Cytosolic
269	LI:002345.15:2001MAY17	1	537 forward 3	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	538	560 forward 3	TM	Transmembrane
269	LI:002345.15:2001MAY17	561	598 forward 3	TM	Cytosolic
269	LI:002345.15:2001MAY17	599	621 forward 3	TM	Transmembrane
269	LI:002345.15:2001MAY17	622	625 forward 3	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	626	648 forward 3	TM	Transmembrane
269	LI:002345.15:2001MAY17	649	660 forward 3	TM	Cytosolic
269	LI:002345.15:2001MAY17	661	678 forward 3	TM	Transmembrane
269	LI:002345.15:2001MAY17	679	687 forward 3	TM	Non-Cytosolic
269	LI:002345.15:2001MAY17	688	705 forward 3	TM	Transmembrane
269	U:002345.15:2001MAY17	· 706	798 forward 3	TM	Cytosolic ·
269	LI:002345.15:2001MAY17	799	818 forward 3	TM	Transmembrane
269	LI:002345.15:2001MAY17	819	822 forward 3	· TM	Non-Cytosolic
269	U:002345.15:2001MAY17	823	845 forward 3	· TM	Transmembrane
269 .	LI:002345.15:2001MAY17	. 846	865 forward 3	. TM	Cytosolic
269	LI:002345.15:2001MAY17	866	888 forward 3	TM	Transmembrane
269	LI:002345.15:2001MAY17	889	1307 forward 3	TM	Non-Cytosolic
270	LI:022629.5:2001MAY17	1	92 forward 3	TM	Cytosolic
270	U:022629.5:2001MAY17	93	115 forward 3	TM	Transmembrane
270	LI:022629.5:2001MAY17	116	139 forward 3	TM	Non-Cytosolic
270	U:022629.5:2001MAY17	140	162 forward 3	TM	Transmembrane
270	LI:022629.5:2001MAY17	163	174 forward 3	TM	Cytosolic
270	LI:022629.5:2001MAY17	175	197 forward 3	TM	Transmembrane
270	LI:022629.5:2001MAY17	198	200 forward 3	TM	Non-Cytosolic
270	LI:022629.5:2001MAY17	201	223 forward 3	TM	Transmembrane
270	LI:022629.5:2001MAY17	224	312 forward 3	TM	Cytosolic
271	LI:061031.4:2001MAY17	1	578 forward 1	TM	Non-Cytosolic
271	LI:061031.4:2001MAY17	579	601 forward 1	TM	Transmembrane
271	LI:061031.4:2001MAY17	602	688 forward 1	TM	Cytosolic
271	U:061031.4:2001MAY17	689	711 forward 1	TM	Transmembrane
271	LI:061031.4:2001MAY17	712	745 forward 1	TM	Non-Cytosolic
271	LI:061031.4:2001MAY17	746	768 forward 1	TM	Transmembrane
271	LI:061031.4:2001MAY17	769	903 forward 1	TM	Cytosolic
271	LI:061031.4:2001MAY17	1	120 forward 2	TM	Non-Cytosolic
271	LI:061031.4:2001MAY17	121	140 forward 2	TM	Transmembrane
271	LI:061031.4:2001MAY17	141	217 forward 2	TM	Cytosolic
271	LI:061031.4:2001MAY17	218	240 forward 2	TM	Transmembrane
271	LI:061031.4:2001MAY17	241	903 forward 2	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
272	U:108232.2:2001MAY17	1	20 forward 1	TM	Cytosolic
272	U:108232.2:2001MAY17	21	40 forward 1	TM	Transmembrane
272	U:108232.2:2001MAY17	41	54 forward 1	TM	Non-Cytosolic
272	LI:108232.2:2001MAY17	55	77 forward 1	TM	Transmembrane
272	LI:108232.2:2001MAY17	78	311 forward 1	TM	Cytosolic
273	LI:1085493.16:2001MAY17	1	342 forward 2	TM	Cytosolic
273	LI:1085493.16:2001MAY17	343	365 forward 2	TM	Transmembrane
273	LI: 1085493.16:2001MAY17	366	384 forward 2	TM	Non-Cytosolic
273	LI:1085493.16:2001MAY17	385	403 forward 2	TM	Transmembrane
273	LI:1085493.16:2001MAY17	404	498 forward 2	TM	Cytosolic
273	LI:1085493.16:2001MAY17	499	521 forward 2	TM	Transmembrane
273	U:1085493.16:2001MAY17	522	1015 forward 2	TM	Non-Cytosolic
273	LI:1085493.16:2001MAY17	1	385 forward 3	TM	Non-Cytosolic
273	LI: 1085493.16:2001MAY17	386	408 forward 3	TM	Transmembrane
273	LI: 1085493.16:2001MAY17	409	517 forward 3	TM	Cytosolic
273	LI:1085493.16:2001MAY17	518	540 forward 3	TM	Transmembrane
273	LI: 1085493.16:2001MAY17	541	1015 forward 3	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	1	722 forward 1	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	723	745 forward 1	TM	Transmembrane
274	LI:1085513.2:2001MAY17	746	757 forward 1	TM	Cytosolic
274	LI:1085513.2:2001MAY17	758	780 forward 1	TM	Transmembrane
274	LI:1085513.2:2001MAY17	781	838 forward 1	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	839	861 forward 1	TM	Transmembrane
274	LI:1085513.2:2001MAY17	862	896 forward 1	TM	Cytosolic
274	LI:1085513.2:2001MAY17	1	639 forward 2	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	640	662 forward 2	TM	Transmembrane
274	LI:1085513.2:2001MAY17	663	7.30. forward 2	TM	Cytosolic
274	LI:1085513.2:2001MAY17	731	753 forward 2	TM	Transmembrane
274	LI:1085513.2:2001MAY17	754	767 forward 2	TM	Non-Cytosolic
274	LI: 1085513.2:2001MAY17	768	790 forward 2	TM	Transmembrane
274	LI: 1085513.2:2001MAY17	791	895 forward 2	TM	Cytosolic
274	LI: 1085513.2:2001MAY17	1	151 forward 3	TM	Non-Cytosolic
274	LI: 1085513.2:2001MAY17	152	171 forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	172	177 forward 3	TM	Cytosolic
274	LI:1085513.2:2001MAY17	178	200 forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	201	203 forward 3	TM	Non-Cytosolic
274	U:1085513.2:2001MAY17	204	226 forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	227	237 forward 3	TM	Cytosolic
274	LI:1085513.2:2001MAY17	238	257 forward 3	TM	Transmembrane
274	LI: 1085513.2:2001MAY17	258	271 forward 3	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	272	294 forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	295	298 forward 3	TM	Cytosolic
274	U:1085513.2:2001МАҮ17	299	321 forward 3	TM .	Transmembrane
274	LI:1085513.2:2001MAY17	322	370 forward 3	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	371	393 forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	394	405 forward 3	TM	Cytosolic
274	LI:1085513.2:2001MAY17	406	439 forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	440	453 forward 3	TM	Non-Cytosolic
274	U:1085513.2:2001МАÝ17	454	476 forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	477	482 forward 3	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
274	LI:1085513.2:2001MAY17	483	505	forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	506	554	forward 3	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	555	577	forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	578	647	forward 3	TM	Cytosolic
274	LI:1085513.2:2001MAY17	648		forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	671	-	forward 3	TM	Non-Cytosolic
274	LI:1085513.2:2001MAY17	703		forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	726		forward 3	TM	Cytosolic
274	U:1085513.2:2001MAY17	737		forward 3	TM	Transmembrane
274	LI:1085513.2:2001MAY17	760		forward 3	TM	Non-Cytosolic
275	LI:1086797.9:2001MAY17	1.	57	forward 1	TM	Cytosolic
275	LI:1086797.9:2001MAY17	58	80	forward 1	TM	Transmembrane
275	LI:1086797.9:2001MAY17	81		forward 1	TM	Non-Cytosolic
275 275	LI:1086797.9:2001MAY17	895		forward 1	TM	Transmembrane
275 275	LI:1086797.9:2001MAY17	918		forward 1	TM	Cytosolic
275 275	LI:1086797.9:2001MAY17	989		forward 1	TM	•
275 275	LI:1086797.9:2001MAY17			forward 1	TM	Transmembrane
						Non-Cytosolic
275	LI:1086797.9:2001MAY17	1		forward 2	TM	Cytosolic
275	LI:1086797.9:2001MAY17	20	42	forward 2	TM	Transmembrane
275	LI:1086797.9:2001MAY17	43	61	forward 2	TM	Non-Cytosolic
275	LI:1086797.9:2001MAY17	62	84	forward 2	TM	Transmembrane
275	U:1086797.9:2001MAY17	85		forward 2	TM	Cytosolic
275	LI:1086797.9:2001MAY17	619		forward 2	TM	Transmembrane
275	LI:1086797.9:2001MAY17	642		forward 2	TM	Non-Cytosolic
. 275	LI:1086797.9:2001MAY17	1		forward 3	TM	Non-Cytosolic
275	LI:1086797.9:2001MAY17	24		forward 3	TM	Transmembrane
275	LI:1086797.9:2001MAY17	47		forward 3	· TM	Cytosolic
275	U:1086797.9:2001MAY17	59		forward 3	TM	Transmembrane
275	LI:1086797.9:2001MAY17			forward 3	. TM	Non-Cytosolic
275	LI:1086797.9:2001MAY17			forward 3	TM	Transmembrane
275	LI:1086797.9:2001MAY17			forward 3	TM	Cytosolic
275	LI:1086797.9:2001MAY17			forward 3	TM	Transmembrane
275	LI:1086797.9:2001MAY17	1615	2117	forward 3	· TM	Non-Cytosolic
275	U:1086797.9:2001MAY17			forward 3	TM	Transmembrane
275	U:1086797.9:2001MAY17	2141	2214	forward 3	TM	Cytosolic
276	U:1088446.1:2001MAY17	1	429	forward 1	TM	Non-Cytosolic
276	LI:1088446.1:2001MAY17	430	449	forward 1	TM	Transmembrane
276	U:1088446.1:2001MAY17	450	593	forward 1	TM	Cytosolic
276	LI:1088446.1:2001MAY17	594	616	forward 1	TM	Transmembrane
276	LI:1088446.1:2001MAY17	617	828	forward 1	TM	Non-Cytosolic
277	LI:1133764.3:2001MAY17	1	560	forward 3	TM	Non-Cytosolic
277	LI:1133764.3:2001MAY17	561	583	forward 3	TM	Transmembrane
277	LI:1133764.3:2001MAY17	584	643	forward 3	TM	Cytosolic
277	LI:1133764.3:2001MAY17	644	666	forward 3	TM	Transmembrane
277	LI:1133764.3:2001MAY17	667		forward 3	TM	Non-Cytosolic
278	LI:1147614.5:2001MAY17	1	12	forward 3	TM	Cytosolic
278	U:1147614.5:2001МАҮ17	13		forward 3	TM	Transmembrane
278	U:1147614.5:2001МАҮ17	36		forward 3	TM	Non-Cytosolic
279	U:1181710.1:2001МАҮ17	1		forward 2	TM	Cytosolic
279	LI:1181710.1:2001MAY17	96		forward 2	TM	Transmembrane
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SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
279	U:1181710.1:2001MAY17	119	222	forward 2	TM	Non-Cytosolic
280	U:1183192.1:2001MAY17	1	403	forward 2	TM	Non-Cytosolic
280	LI:1183192.1:2001MAY17	404	426	forward 2	TM	Transmembrane
280	LI:1183192.1:2001MAY17	427	529	forward 2	TM	Cytosolic
281	LI:1188786.15:2001MAY17	1	615	forward 1	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	616	638	forward 1	TM	Transmembrane
281	U:1188786.15:2001MAY17	639	736	forward 1	TM	Cytosolic
281	LI:1188786.15:2001MAY17	737	759	forward 1	TM	Transmembrane
281	U:1188786.15:2001MAY17	760	841	forward 1	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	842	864	forward 1	TM	Transmembrane
281	LI:1188786.15:2001MAY17	865		forward 1	TM	Cytosolic
281	LI:1188786.15:2001MAY17	1115		forward 1	TM	Transmembrane
281	LI:1188786.15:2001MAY17	1138		forward 1	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	1208		forward 1	TM	Transmembrane
281	LI:1188786.15:2001MAY17	1231		forward 1	TM	Cytosolic
281	LI:1188786.15:2001MAY17	1		forward 2	TM	Non-Cytosolic
281	U:1188786.15:2001МАY17	590		forward 2	TM	Transmembrane
281	U:1188786.15:2001МАҮ17	610		forward 2	TM	Cytosolic
281	LI:1188786.15:2001MAY17	616		forward 2	TM	Transmembrane
281	LI:1188786.15:2001MAY17	639		forward 2	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	670		forward 2	TM	Transmembrane
281	LI:1188786.15:2001MAY17	693		forward 2	TM	Cytosolic
281	LI:1188786.15:2001MAY17	699		forward 2	TM	Transmembrane
281	U:1188786.15:2001МАY17	722		forward 2	TM	Non-Cytosolic
281	U:1188786.15:2001МАY17	736		forward 2	TM	Transmembrane
281	LI:1188786.15:2001MAY17	755		forward 2	TM	Cytosolic
281	LI:1188786.15:2001MAY17	925		forward 2	TM	Transmembrane
281	LI:1188786.15:2001MAY17	948		forward 2	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	_		forward 2	. TM	Transmembrane
281	LI:1188786.15:2001MAY17			forward 2	TM	Cytosolic
281	LI:1188786.15:2001MAY17			forward 2	TM	Transmembrane
281	LI:1188786.15:2001MAY17			forward 2	TM	Non-Cytosolic
281	U:1188786.15:2001МАY17			forward 2	TM	Transmembrane
281	L:1188786.15:2001MAY17			forward 2	TM	Cytosolic
281	LI:1188786.15:2001MAY17	1207		forward 3	TM	Cytosolic
281	LI:1188786.15:2001MAY17	66		forward 3	TM	Transmembrane
281	LI:1188786.15:2001MAY17	89		forward 3	· TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	569		forward 3	TM	Transmembrane
281	LI:1188786.15:2001MAY17	588		forward 3	TM	Cytosolic
281	LI:1188786.15:2001МАY17	618		forward 3	TM	Transmembrane
281	L:1188786.15:2001MAY17	641		forward 3	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	667		forward 3	TM	Transmembrane
281	L:1188786.15:2001МАY17	690		forward 3	TM	
281	LJ:1188786.15:2001MAY17	702		forward 3	TM	Cytosolic
281	LI:1188786.15:2001MAY17	702 722		forward 3		Transmembrane
281	LI:1188786.15:2001MAY17				TM	Non-Cytosolic
	LI:1188786.15:2001MAY17	736		forward 3	TM	Transmembrane
281		759		forward 3	TM	Cytosolic
281	U:1188786.15:2001MAY17	803		forward 3	TM	Transmembrane
281	U:1188786.15:2001MAY17	826		forward 3	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	925	947	forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
281	U:1188786.15:2001МАҮ17	948	1041 forward 3	TM	Cytosolic
281	LI:1188786.15:2001MAY17	1042	1064 forward 3	TM	Transmembrane
281	LI:1188786.15:2001MAY17	1065	1093 forward 3	TM	Non-Cytosolic
281	LI:1188786.15:2001MAY17	1094	1116 forward 3	TM	Transmembrane
281	LI:1188786.15:2001MAY17	1117	1253 forward 3	TM	Cytosolic
282	U:145626.1:2001MAY17	1	662 forward 2	TM	Non-Cytosolic
282	LI:145626.1:2001MAY17	663	685 forward 2	TM	Transmembrane
282	LI:145626.1:2001MAY17	686	947 forward 2	TM	Cytosolic
282	LI:145626.1:2001MAY17	948	970 forward 2	TM	Transmembrane
282	LI:145626.1:2001MAY17	971	1038 forward 2	TM	Non-Cytosolic
283	LI:147869.3:2001MAY17	1	94 forward 1	TM	Cytosolic
283	LI:147869.3:2001MAY17	95	117 forward 1	TM	Transmembrane
283	LI:147869.3:2001MAY17	118	131 forward 1	TM	Non-Cytosolic
283	LI:147869.3:2001MAY17	132	154 forward 1	TM	Transmembrane
283	LI:147869.3:2001MAY17	155	221 forward 1	TM	Cytosolic
283	LI:147869.3:2001MAY17	222	244 forward 1	TM	Transmembrane
283	LI:147869.3:2001MAY17	245	419 forward 1	TM	Non-Cytosolic
283	U:147869.3:2001MAY17	420	442 forward 1	TM	Transmembrane
283	LI:147869.3:2001MAY17	443	446 forward 1	TM	Cytosolic
283	LI:147869.3:2001MAY17	447	469 forward 1	TM	Transmembrane
283	U:147869.3:2001МАY17	470	478 forward 1	TM	Non-Cytosolic
283	LI:147869.3:2001MAY17	479	501 forward 1	TM	Transmembrane
283	LI:147869.3:2001MAY17	502	513 forward 1	TM	Cytosolic
283	LI:147869.3:2001MAY17	514	. 536 forward 1	TM	Transmembrane
283	LI:147869.3:2001MAY17	537	550 forward 1	TM	Non-Cytosolic
283	LI:147869.3:2001MAY17	551	573 forward 1		Transmembrane
283	LI:147869.3:2001MAY17	574	619 forward 1	·TM	Cytosolic
283	LI:147869.3:2001MAY17	1	470 forward 2	TM	Non-Cytosolic
283	LI:147869.3:2001MAY17	471	493 forward 2	TM ·	Transmembrane
283	LI:147869.3:2001MAY17	494	519 forward 2	TM	Cytosolic
283	LI:147869.3:2001MAY17	520	542 forward 2	TM	Transmembrane
283	LI:147869.3:2001MAY17	543	551 forward 2	TM	Non-Cytosolic
283	LI:147869.3:2001MAY17	552	571 forward 2	TM	Transmembrane
283	LI:147869.3:2001MAY17	572	591 forward 2	TM	Cytosolic
283	LI:147869.3:2001MAY17	592	614 forward 2	TM	Transmembrane
283	LI:147869.3:2001MAY17	615	619 forward 2	TM	Non-Cytosolic
284	U:151747.4:2001MAY17	1	671 forward 1	TM	Non-Cytosolic
284	U:151747.4:2001MAY17	672	691 forward 1	TM	Transmembrane
284	U:151747.4:2001MAY17	692	860 forward 1	TM	Cytosolic
284	LI:151747.4:2001MAY17	861	883 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17	884	897 forward 1	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17	898	920 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17	921	1133 forward 1	TM	Cytosolic
284	LI:151747.4:2001MAY17		1156 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17		1209 forward 1	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17		1232 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17		1238 forward 1	TM	Cytosolic
284	LI:151747.4:2001MAY17		1258 forward 1	TM	Transmembrane
284	U:151747.4:2001МАY17		1272 forward 1	TM	Non-Cytosolic
284	U:151747.4:2001MAY17		1295 forward 1	TM	Transmembrane
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SEQ ID NO:	Template ID	Start St	op Frame	Domain	Topology
284	LI:151747.4:2001MAY17		299 forward 1	TM	Cytosolic
284	LI:151747.4:2001MAY17		322 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17		366 forward 1	TM	Non-Cytosolic
284	U:151747.4:2001MAY17		386 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17		392 forward 1	TM	Cytosolic
284	U:151747.4:2001MAY17		415 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17		434 forward 1	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17		457 forward 1	TM	Transmembrane
284	LI:151747.4:2001MAY17		535 forward 1	TM	Cytosolic
284	LI:151747.4:2001MAY17		32 forward 2	TM	Non-Cytosolic
284	U:151747.4:2001МАҮ17		55 forward 2	TM	Transmembrane
284	LI:151747.4:2001MAY17		75 forward 2	TM	Cytosolic
284	LI:151747.4:2001MAY17		98 forward 2	TM	Transmembrane
284	LI:151747.4:2001MAY17		73 forward 2	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17		93 forward 2	TM	Transmembrane
284	LI:151747.4:2001MAY17	-	45 forward 2	TM	Cytosolic
284	LI:151747.4:2001MAY17		65 forward 2	TM	Transmembrane
284	U:151747.4:2001MAY17	•	96 forward 2	TM	Non-Cytosolic
284	L:151747.4:2001MAY17		19 forward 2	TM	Transmembrane
284	L:151747.4:2001MAY17		76 forward 2	TM	Cytosolic
284	L:151747.4:2001MAY17		99 forward 2	TM	Transmembrane
.284	LI:151747.4:2001MAY17		99 101Wald 2 185 forward 2	· TM	
284	L:151747.4:2001MAY17		08 forward 2	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17		206 forward 2		Transmembrane
284	LI:151747.4:2001MAY17		229 forward 2	TM	Cytosolic
284	LI:151747.4:2001MAY17			TM	Transmembrane
	LI:151747.4:2001MAY17		238 forward 2 258 forward 2	TM	Non-Cytosolic
. 204 . 284	LI:151747.4:2001MAY17		327 forward 2	·· TM	Transmembrane
284	LI:151747.4:2001MAY17		350 forward 2	TM	Cytosolic
284	L:151747.4:2001MAY17		372 forward 2	TM	Transmembrane
284 284	LI:151747.4:2001MAY17			TM	Non-Cytosolic
284 284			195 forward 2	TM	Transmembrane
284 284	LI:151747.4:2001MAY17 LI:151747.4:2001MAY17		101 forward 2	TM	Cytosolic
			124 forward 2	TM	Transmembrane
284	LI:151747.4:2001MAY17 LI:151747.4:2001MAY17		138 forward 2	TM	Non-Cytosolic
284			61 forward 2	TM	Transmembrane
284 284	LI:151747.4:2001MAY17 LI:151747.4:2001MAY17		35 forward 2	TM	Cytosolic
	===::::: •::::		60 forward 3	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17		B3 forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17		57 forward 3	TM	Cytosolic
284	LI:151747.4:2001MAY17		BO forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17		B9 forward 3	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17		12 forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17		000 forward 3	TM	Cytosolic
284	U:151747.4:2001MAY17		20 forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17		29 forward 3	TM	Non-Cytosolic
284	U:151747.4:2001MAY17		47 forward 3	TM	Transmembrane
284	U:151747.4:2001MAY17		85 forward 3	TM	Cytosolic
284	LI:151747.4:2001MAY17		08 forward 3	TM	Transmembrane '
284	U:151747.4:2001МАУ17		20 forward 3	TM	Non-Cytosolic
284	U:151747.4:2001MAY17	1121 11	43 forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
284	U:151747.4:2001MAY17	1144	1204 forward 3	TM	Cytosolic
284	Ц:151747.4:2001MAY17	1205	1227 forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17	1228	1292 forward 3	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17	1293	1315 forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17		1327 forward 3	TM	Cytosolic
284	LI:151747.4:2001MAY17		1350 forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17	1351	1375 forward 3	TM	Non-Cytosolic
284	LI:151747.4:2001MAY17		1398 forward 3	TM	Transmembrane
284	LI:151747.4:2001MAY17		1404 forward 3	TM	Cytosolic
284	U:151747.4:2001MAY17		1427 forward 3	TM	Transmembrane
284	U:151747.4:2001MAY17		1441 forward 3	TM	Non-Cytosolic
284	U:151747.4:2001MAY17	1442	1464 forward 3	TM	Transmembrane
284	U:151747.4:2001MAY17		1470 forward 3	TM	Cytosolic
284	U:151747.4:2001MAY17	1471	1493 forward 3	TM	Transmembrane
284	U:151747.4:2001МАҮ17		1535 forward 3	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	1	896 forward 1	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	897	914 forward 1	TM	Transmembrane
285	LI:198296.1:2001MAY17	915	920 forward 1	TM	Cytosolic
285	L:198296.1:2001MAY17	921	943 forward 1	TM	Transmembrane
285	L:198296.1:2001MAY17	944	1036 forward 1	TM	Non-Cytosolic
285	L:198296.1:2001MAY17		1059 forward 1	TM	Transmembrane
285	LI:198296.1:2001MAY17		1127 forward 1	TM	Cytosolic .
285	LI:198296.1:2001MAY17	1128	1150 forward 1	TM	Transmembrane
285	L:198296.1:2001MAY17	1151	1176 forward 1	, TM	Non-Cytosolic
285	L:198296.1:2001MAY17		1199 forward 1	TM	Transmembrane
285	L:198296.1:2001MAY17		1211 forward 1	TM	Cytosolic
285	L:198296.1:2001MAY17		1234 forward 1	TM	Transmembrane
285	LI:198296.1:2001MAY17		1286 forward 1	TM	Non-Cytosolic
285 ·	U:198296.1:2001МАY17		1309 forward 1	. TM	Transmembrane
285	L:198296.1:2001MAY17		1329 forward 1	TM	Cytosolic
285	L:198296.1:2001MAY17		1352 forward 1	TM	Transmembrane
285	U:198296.1:2001МАY17		1428 forward 1	TM	Non-Cytosolic
285	U:198296.1:2001МАY17		1451 forward 1	TM	Transmembrane
285	L:198296.1:2001MAY17		1456 forward 1	TM	Cytosolic
285	LI:198296.1:2001MAY17	1	20 forward 2	TM	Cytosolic
285	LI:198296.1:2001MAY17	21	43 forward 2	TM	Transmembrane :
285	LI:198296.1:2001MAY17	44	530 forward 2	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	531	553 forward 2	· TM	Transmembrane
285	LI:198296.1:2001MAY17	554	573 forward 2	TM	Cytosolic
285	LI:198296.1:2001MAY17	574	596 forward 2	TM	Transmembrane
285	LI:198296.1:2001MAY17	597	605 forward 2	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	606	628 forward 2	TM	Transmembrane
285	U:198296.1:2001МАY17	629	766 forward 2	TM	Cytosolic
285	LI:198296.1:2001MAY17	767	789 forward 2	TM	Transmembrane
285	L:198296.1:2001MAY17	790	813 forward 2	TM	Non-Cytosolic
285 285	L:198296.1:2001MAY17	814	836 forward 2	TM	Transmembrane
285	L:198296.1:2001MAY17	837	1054 forward 2	TM	
285	LI:198296.1:2001MAY17		1054 forward 2 1077 forward 2	TM	Cytosolic
285 285	LI:198296.1:2001MAY17				Transmembrane
			1091 forward 2	TM	Non-Cytosolic
285	U:198296.1:2001MAY17	1092	1114 forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
285	U:198296.1:2001MAY17	1115	1126 forward 2	TM	Cytosolic
285	LI:198296.1:2001MAY17	1127	1149 forward 2	TM	Transmembrane
285	LI:198296.1:2001MAY17	1150	1216 forward 2	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	1217	1239 forward 2	TM	Transmembrane
285	LI:198296.1:2001MAY17	1240	1285 forward 2	TM	Cytosolic
285	LI:198296.1:2001MAY17	1286	1308 forward 2	TM	Transmembrane
285	LI:198296.1:2001MAY17		1339 forward 2	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	1340	1362 forward 2	TM	Transmembrane
285	LI:198296.1:2001MAY17		1405 forward 2	TM	Cytosolic
285	LI:198296.1:2001MAY17	1406	1425 forward 2	TM	Transmembrane
285	LI:198296.1:2001MAY17	1426	1456 forward 2	TM	Non-Cytosolic
285	U:198296.1:2001MAY17	1	458 forward 3	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	459	481 forward 3	TM	Transmembrane
285	U:198296.1:2001MAY17	482	524 forward 3	TM	Cytosolic
285	LI:198296.1:2001MAY17	525	547 forward 3	TM	Transmembrane
285	U:198296.1:2001MAY17	548	921 forward 3	TM	Non-Cytosolic
285	Ц:198296.1:2001MAY17	922	944 forward 3	TM	Transmembrane
285	LI:198296.1:2001MAY17	945	1010 forward 3	TM	Cytosolic
285	LI:198296.1:2001MAY17	1011	1028 forward 3	TM	Transmembrane
285	LI:198296.1:2001MAY17	1029	1136 forward 3	TM	Non-Cytosolic
285	LI:198296.1:2001MAY17	1137	1159 forward 3	TM	Transmembrane
285	LI:198296.1:2001MAY17 .	1160	1219 forward 3	· TM	Cytosolic
285	LI:198296.1:2001MAY17	1220	1242 forward 3	TM	Transmembrane
285	LI:198296.1:2001MAY17	1243	1274 forward 3	TM .	Non-Cytosolic
. 285	LI:198296.1:2001MAY17	1275	1297 forward 3	TM	Transmembrane
285	LI:198296.1:2001MAY17	1298	1405 forward 3	TM	Cytosolic
285	LI:198296.1:2001MAY17	1406	1425 forward 3	TM	Transmembrane
285	LI:198296.1:2001MAY17	1426	1456 forward 3	TM	Non-Cytosolic
286	LI:2001.17.4:2001MAY17	1	338 forward 1	TM	Non-Cytosolic
286	LI:200117.4:2001MAY17	339	361 forward 1	TM	Transmembrane
286	LI:200117.4:2001MAY17	362	381 forward 1	TM	Cytosolic
286	LI:200117.4:2001MAY17	382	399 forward 1	TM	Transmembrane
286	LJ:200117.4:2001MAY17	400	441 forward 1	TM	Non-Cytosolic
287	LI:200704.1:2001MAY17	1	28 forward 1	TM	Cytosolic
287	LI:200704.1:2001MAY17	29	51 forward 1	TM	Transmembrane
287	LI:200704.1:2001MAY17	52	880 forward 1	TM	Non-Cytosolic
287	⊔:200704.1:2001MAY17	1	571 forward 3	TM	Non-Cytosolic
287	LI:200704.1:2001MAY17	572	594 forward 3	TM	Transmembrane
287	LI:200704.1:2001MAY17	595	705 forward 3	TM	Cytosolic
287	LI:200704.1:2001MAY17	706	728 forward 3	TM	Transmembrane
287	LI:200704.1:2001MAY17	729	772 forward 3	TM	Non-Cytosolic
287	U:200704.1:2001MAY17	773	792 forward 3	TM	Transmembrane
287	LI:200704.1:2001MAY17	793	879 forward 3	TM	Cytosolic
288	LI:2049995.3:2001MAY17	1	1134 forward 1	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17		1157 forward 1	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1217 forward 1	TM	Cytosolic
288	LI:2049995.3:2001MAY17		1240 forward 1	TM	Transmembrane
288	U:2049995.3:2001MAY17		1276 forward 1	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17		1295 forward 1	TM	Transmembrane
288	U:2049995.3:2001MAY17	1296	1453 forward 1	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
288	LI:2049995.3:2001MAY17	1454	1476 forward 1	TM	Transmembrane
288	LI:2049995.3:2001MAY17	1477	1504 forward 1	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17	1505	1527 forward 1	TM	Transmembrane
288	LI:2049995.3:2001MAY17	1528	1642 forward 1	TM	Cytosolic
288	LI:2049995.3:2001MAY17	1643	1660 forward 1	TM	Transmembrane
288	LI:2049995.3:2001MAY17	1661	1668 forward 1	TM	Non-Cytosolic
288	U:2049995.3:2001MAY17	1	831 forward 2	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17	832	854 forward 2	TM	Transmembrane
288	LI:2049995.3:2001MAY17	855	913 forward 2	TM	Cytosolic
288	LI:2049995.3:2001MAY17	914	936 forward 2	TM	Transmembrane
288	LI:2049995.3:2001MAY17	937	1061 forward 2	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17		1084 forward 2	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1096 forward 2	TM	Cytosolic
288	LI:2049995.3:2001MAY17		1119 forward 2	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1122 forward 2	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17		1145 forward 2	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1635 forward 2	TM	Cytosolic
288	LI:2049995.3:2001MAY17		1658 forward 2	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1668 forward 2	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17	1	1125 forward 3	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17	•	1148 forward 3	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1263 forward 3	TM	Cytosolic
288	LI:2049995.3:2001MAY17		1283 forward 3	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1302 forward 3	TM	Non-Cytosolic
288	LI:2049995.3:2001MAY17		1325 forward 3	TM	Transmembrane
288	LI:2049995.3:2001MAY17		1448 forward 3	TM	Cytosolic
. 288	LI:2049995.3:2001MAY17		1471 forward 3	· TM	Transmembrane
288	LI:2049995.3:2001MAY17		1667 forward 3	TM	Non-Cytosolic
289	LI:2052097.2:2001MAY17	1	939 forward 3	TM	Non-Cytosolic
289	LI:2052097.2:2001MAY17	940	962 forward 3	TM	Transmembrane
289	LI:2052097.2:2001MAY17	963	982 forward 3	TM	Cytosolic
289	LI:2052097.2:2001MAY17	983	1005 forward 3	TM	Transmembrane
289	LI:2052097.2:2001MAY17	-	1008 forward 3	TM	Non-Cytosolic
289	LI:2052097.2:2001MAY17	1009	1031 forward 3	TM	Transmembrane
289	LI:2052097.2:2001MAY17		1062 forward 3	TM	Cytosolic
290	LI:209351.22:2001MAY17	1	845 forward 2	TM	Non-Cytosolic
290	LI:209351.22:2001MAY17	846	868 forward 2	TM	Transmembrane
290	LI:209351.22:2001MAY17	869	922 forward 2	TM	Cytosolic
290	LI:209351.22:2001MAY17	1	730 forward 3	TM	Non-Cytosolic
290	LI:209351.22:2001MAY17	731	753 forward 3	TM	Transmembrane
290	LI:209351.22:2001MAY17	754	853 forward 3	TM	Cytosolic
290	LI:209351.22:2001MAY17	854	876 forward 3	TM	Transmembrane
290	LI:209351.22:2001MAY17	877	922 forward 3	TM	Non-Cytosolic
291	LI:2120481.1:2001MAY17	1	218 forward 1	TM	Non-Cytosolic
291	LI:2120481.1:2001MAY17	219	241 forward 1	TM	Transmembrane
291	LI:2120481.1:2001MAY17	242	252 forward 1	TM	Cytosolic
291	LI:2120481.1:2001MAY17	253	275 forward 1	TM	Transmembrane
291	U:2120481.1:2001МАY17	276	284 forward 1	TM	Non-Cytosolic
291	LI:2120481.1:2001MAY17	285	304 forward 1	TM	Transmembrane
291	U:2120481.1:2001МАY17	305	344 forward 1	TM	Cytosolic
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SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
291	LI:2120481.1:2001MAY17	345	367	forward 1	I TM	Transmembrane
291	LI:2120481.1:2001MAY17	368	386	forward 1	TM	Non-Cytosolic
291	LI:2120481.1:2001MAY17	387	409	forward 1	MT	Transmembrane
291	LI:2120481.1:2001MAY17	410	461	forward 1	TM	Cytosolic
291	LI:2120481.1:2001MAY17	462	484	forward 1	TM	Transmembrane
291	LI:2120481.1:2001MAY17	485	493	forward 1	TM	Non-Cytosolic
291	LI:2120481.1:2001MAY17	494	516	forward 1	TM	Transmembrane
291	LI:2120481.1:2001MAY17	517	527	forward 1	TM	Cytosolic
291	LI:2120481.1:2001MAY17	528	550	forward 1	TM	Transmembrane
291	U:2120481.1:2001MAY17	551	551	forward 1	TM	Non-Cytosolic
29 1.	LI:2120481.1:2001MAY17	1	522	forward 2	? TM	Non-Cytosolic
291	LI:2120481.1:2001MAY17	523	545	forward 2	2 TM	Transmembrane
291	U:2120481.1:2001MAY17	546	551	forward 2	? TM	Cytosolic
292	LI:2121610.13:2001MAY17	1	6	forward 1	TM	Cytosolic
292	LI:2121610.13:2001MAY17	7	29	forward 1	TM	Transmembrane
292	LI:2121610.13:2001MAY17	30	316	forward 1	TM	Non-Cytosolic
292	LI:2121610.13:2001MAY17	1	77	forward 3	TM.	Non-Cytosolic
292	LI:2121610.13:2001MAY17	78	100	forward 3	TM	Transmembrane
292	LI:2121610.13:2001MAY17	101	140	forward 3	TM	Cytosolic
292	LI:2121610.13:2001MAY17	. 141	163	forward 3	TM	Transmembrane
292	LI:2121610.13:2001MAY17	164	177	forward 3	TM	Non-Cytosolic
292	LI:2121610.13:2001MAY17	178	200	forward 3	TM	Transmembrane
292 ·	LI:2121610.13:2001MAY17	201	220	forward 3	TM	Cytosolic ·
292.	LI:2121610.13:2001MAY17	221	238	forward 3	· . TM	Transmembrane
292 . ·	LI:2121610.13:2001MAY17	239	250	forward 3	· TM	Non-Cytosolic
292 ·	U:2121610.13:2001MAY17 :	251	269	forward 3	i TM	Transmembrane
292	LI:2121610.13:2001MAY17	270	316	forward 3	TM	Cytosolic '
293	LI:2191585.1:2001MAY17	1	72	forward 1	TM	Non-Cytosolic
293	LI:2191585.1:2001MAY17	73	95	forward 1	TM	Transmembrane
293	LI:2191585.1:2001MAY17	96	147	forward 1	TM	Cytosolic
293	LI:2191585.1:2001MAY17	148	167	forward 1	TM	Transmembrane
293	Ц:2191585.1:2001MAY17	168	176	forward 1	TM	Non-Cytosolic
293	U:2191585.1:2001MAY17	177	199	forward 1	TM	Transmembrane
293	LI:2191585.1:2001MAY17	200	239	forward 1	TM	Cytosolic
293	Ц:2191585.1:2001MAY17	240	262	forward 1	TM	Transmembrane
293	LI:2191585.1:2001MAY17	263	298	forward 1	TM	Non-Cytosolic
294	LI:2198562.3:2001MAY17	1	112	forward 2	. TM	Cytosolic
294	LI:2198562.3:2001MAY17	113	135	forward 2	. TM	Transmembrane
294	LI:2198562.3:2001MAY17	136	906	forward 2	. TM	Non-Cytosolic
294	LI:2198562.3:2001MAY17	1	117	forward 3	TM	Cytosolic
294	LI:2198562.3:2001MAY17	118	140	forward 3	TM	Transmembrane
294	LI:2198562.3:2001MAY17	141	905	forward 3	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17	1	1501	forward 1	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17	1502	1524	forward 1	TM	Transmembrane
295	LI:2209684.5:2001MAY17	1525	1530	forward 1	TM	Cytosolic
295	LI:2209684.5:2001MAY17	1531	1553	forward 1	TM	Transmembrane
295	LI:2209684.5:2001MAY17	1554	1804	forward 1	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17	1805	1827	forward 1	TM	Transmembrane
295	LI:2209684.5:2001MAY17	1828	1840	forward 1	TM	Cytosolic
295	LI:2209684.5:2001MAY17	1	837	forward 2	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
295	LI:2209684.5:2001MAY17	838	860 forward 2	TM	Transmembrane
295	U:2209684.5:2001MAY17	861	971 forward 2	TM	Cytosolic
295	U:2209684.5:2001MAY17	972	994 forward 2	TM	Transmembrane
295	U:2209684.5:2001MAY17	995	1033 forward 2	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17	1034	1056 forward 2	TM	Transmembrane
295	LI:2209684.5:2001MAY17	1057	1068 forward 2	TM	Cytosolic
295	LI:2209684.5:2001MAY17	1069	1091 forward 2	TM	Transmembrane
295	LI:2209684.5:2001MAY17	1092	1100 forward 2	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17		1123 forward 2	TM	Transmembrane
295	LI:2209684.5:2001MAY17	1124	1527 forward 2	TM	Cytosolic
295	LI:2209684.5:2001MAY17		1550 forward 2	TM	Transmembrane
295	U:2209684.5:2001MAY17		1601 forward 2	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17		1619 forward 2	TM	Transmembrane
295	LI:2209684.5:2001MAY17		1797 forward 2	TM	Cytosolic
295	LI:2209684.5:2001MAY17		1817 forward 2	TM	Transmembrane
295	LI:2209684.5:2001MAY17		1840 forward 2	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17	1	837 forward 3	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17	838	860 forward 3	TM	Transmembrane
295	LI:2209684.5:2001MAY17	861	970 forward 3	TM	Cytosolic
295	LI:2209684.5:2001MAY17	971	993 forward 3	TM	Transmembrane
295	LI:2209684.5:2001MAY17	994	1084 forward 3	TM	Non-Cytosolic
	LI:2209684.5:2001MAY17		1107 forward 3	· TM	Transmembrane
295	LI:2209684.5:2001MAY17		1532 forward 3	TM	Cytosolic ·
295	LI:2209684.5:2001MAY17		1555 forward 3	TM	Transmembrane
295	LI:2209684.5:2001MAY17		1569 forward 3	TM	Non-Cytosolic
295	LI:2209684.5:2001MAY17		1589 forward 3	TM	Transmembrane
	LI:2209684.5:2001MAY17		1600 forward 3	· TM	Cytosolic
295	LI:2209684.5:2001MAY17		1623 forward 3	TM	Transmembrane
295	LI:2209684.5:2001MAY17		1839 forward 3	TM	Non-Cytosolic
296	LI:222795.28:2001MAY17		1525 forward 1	TM	Non-Cytosolic
	LI:222795.28:2001MAY17	-	1548 forward 1	TM	Transmembrane
296 ·	LI:222795.28:2001MAY17		1686 forward 1	TM	Cytosolic
297	LI:228273.25:2001MAY17	1047	1378 forward 2	TM	Non-Cytosolic
297	LI:228273.25:2001MAY17	•	1401 forward 2	TM	Transmembrane
297	LI:228273.25:2001MAY17		1501 forward 2	TM	Cytosolic
297	LI:228273.25:2001MAY17	1	45 forward 3	TM	. Cytosolic
297	LI:228273.25:2001MAY17	46	68 forward 3	TM	Transmembrane
297	LI:228273.25:2001MAY17	69	659 forward 3	TM	Non-Cytosolic
297	LI:228273.25:2001MAY17	660	682 forward 3	TM	Transmembrane
297	LI:228273.25:2001MAY17	683	694 forward 3	TM	Cytosolic
297	LI:228273.25:2001MAY17	695	717 forward 3	TM	Transmembrane
297	LI:228273.25:2001MAY17	718	1501 forward 3	TM	Non-Cytosolic
298	LI:232386.31:2001MAY17	1	1013 forward 1	TM	Non-Cytosolic
298	LI:232386.31:2001MAY17	•	1032 forward 1	TM	Transmembrane
298	LI:232386.31:2001MAY17		1074 forward 1	TM	Cytosolic
298	LI:232386.31:2001MAY17		1074 forward 1	TM	Transmembrane
298	LI:232386.31:2001MAY17		1153 forward 1	TM	Non-Cytosolic
296 298	LI:232386.31:2001MAY17	1070		TM	•
298	L:232386.31:2001MAY17	1012	1012 forward 2	TM	Non-Cytosolic
	LI:232386.31:2001MAY17		1032 forward 2		Transmembrane
298	LI.202000.0 I.200 IIVIMY I/	1033	1089 forward 2	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
298	U:232386.31;2001MAY17		1112 forward 2	TM	Transmembrane
298	LI:232386.31:2001MAY17		1126 forward 2	TM	Non-Cytosolic
298	LI:232386.31:2001MAY17	_	1149 forward 2	TM	Transmembrane
298	LI:232386.31:2001MAY17		1153 forward 2	TM	Cytosolic
298	LI:232386.31:2001MAY17	1	714 forward 3	TM	Non-Cytosolic
298	LI:232386.31:2001MAY17	715	737 forward 3	TM	Transmembrane
298	LI:232386.31:2001MAY17	738	940 forward 3	TM	Cytosolic
298	U:232386.31:2001MAY17	941	958 forward 3	TM	Transmembrane
298	LI:232386.31:2001MAY17	959	972 forward 3	TM	Non-Cytosolic
298	LI:232386.31:2001MAY17	973	992 forward 3	TM	Transmembrane
298	U:232386.31:2001MAY17	993	1089 forward 3	TM	Cytosolic
298	LI:232386.31:2001MAY17		1112 forward 3	TM	Transmembrane
298	LI:232386.31:2001MAY17		11121 forward 3	TM	Non-Cytosolic
298	LI:232386.31:2001MAY17		1144 forward 3	TM	Transmembrane
298	LI:232386.31:2001MAY17		1153 forward 3	TM	Cytosolic
299	LI:233089.2:2001MAY17	1140	54 forward 1	TM	Cytosolic
299	U:233089.2:2001MAY17	55	77 forward 1	TM	Transmembrane
299	LI:233089.2:2001MAY17	78	81 forward 1	TM	Non-Cytosolic
299	LI:233089.2:2001MAY17	82	104 forward 1	TM	Transmembrane
299	LI:233089.2:2001MAY17	105	116 forward 1	TM	Cytosolic
299	LI:233089.2:2001MAY17	117	136 forward 1	TM	Transmembrane
299	U:233089.2:2001MAY17	137	1055.forward 1	TM	Non-Cytosolic
299	U:233089.2:2001МАY17		1033.101Wald 1	TM	Transmembrane
299 299	LI:233089.2:2001MAY17		1076 forward 1	· TM	
299 299	LI:233089.2:2001MAY17		1:113 forward 1	TM	Cytosolic
299 299	LI:233089.2:2001MAY17		1151 forward 1	·TM	Transmembrane
299 299	LI:233089.2:2001MAY17		1.174 forward 1	TM	Non-Cytosolic
299 299	LI:233089.2:2001MAY17		1279 forward 1	TM	Transmembrane
299 299	LI:233089.2:2001MAY17		1279 lotward 1 1:297 forward 1	. TM	Cytosolic
299 299	U:233089.2:2001МАY17		1316 forward 1	TM	Transmembrane
299 299	U:233089.2:2001МАY17		1339 forward 1	TM	Non-Cytosolic
299 299	U:233089.2:2001МАY17		1357 forward 1	TM	Transmembrane
299 299					Cytosolic
299 299	LI:233089.2:2001MAY17		1380 forward 1	TM	Transmembrane
299 299	U:233089.2:2001MAY17 U:233089.2:2001MAY17	_	1954 forward 1	TM	Non-Cytosolic
299 299	L:233089.2:2001МАY17	1070	1069 forward 2	TM	Non-Cytosolic
299 299	LI:233089,2:2001MAY17		1087 forward 2 1106 forward 2	TM	Transmembrane
	LI:233089.2:2001MAY17	•		TM	Cytosolic
299			1129 forward 2	TM	Transmembrane
299	LI:233089.2:2001MAY17		1551 forward 2	TM	Non-Cytosolic
299	LI:233089.2:2001MAY17		1574 forward 2	TM	Transmembrane
299	U:233089.2:2001MAY17		1857 forward 2	TM	Cytosolic
299	LI:233089.2:2001MAY17		1880 forward 2	TM	Transmembrane
299	U:233089.2:2001MAY17		1884 forward 2	TM	Non-Cytosolic
299	LI:233089.2:2001MAY17		1907 forward 2	TM	Transmembrane
299	LI:233089.2:2001MAY17	_	1954 forward 2	TM	Cytosolic
299	LI:233089.2:2001MAY17]	987 forward 3	TM	Non-Cytosolic
299	LI:233089.2:2001MAY17	988	1010 forward 3	TM	Transmembrane
299	U:233089.2:2001MAY17		1124 forward 3	TM	Cytosolic
299	LI:233089.2:2001MAY17		1147 forward 3	TM	Transmembrane
299	LI:233089.2:2001MAY17	1148	1161 forward 3	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
299	LI:233089.2:2001MAY17	1162	1184 forward 3	TM	Transmembrane
299	LI:233089.2:2001MAY17	1185	1216 forward 3	TM	Cytosolic
299	LI:233089.2:2001MAY17	1217	1234 forward 3	TM	Transmembrane
299	LI:233089.2:2001MAY17	1235	1458 forward 3	TM	Non-Cytosolic
299	LI:233089.2:2001MAY17	1459	1481 forward 3	TM	Transmembrane
299	LI:233089.2:2001MAY17	1482	1549 forward 3	TM	Cytosolic
299	LI:233089.2:2001MAY17	1550	1572 forward 3	TM	Transmembrane
299	LI:233089.2:2001MAY17		1954 forward 3	TM	Non-Cytosolic
300	LI:240641.10:2001MAY17	1	608 forward 1	TM	Non-Cytosolic
300	LI:240641.10:2001MAY17	609	631 forward 1	TM	Transmembrane
300	LI:240641.10:2001MAY17	632	650 forward 1	TM	Cytosolic
300	LI:240641.10:2001MAY17	651	670 forward 1	TM	Transmembrane
	U:240641.10:2001MAY17	671	1345 forward 1	TM	Non-Cytosolic
301	U:243871.4:2001MAY17	1	361 forward 1	TM	Non-Cytosolic
301	LI:243871.4:2001MAY17	362	384 forward 1	TM	Transmembrane
301	LI:243871.4:2001MAY17	385	390 forward 1	TM	Cytosolic
301	LI:243871.4:2001MAY17	391	413 forward 1	TM	Transmembrane
301	LI:243871.4:2001MAY17	414	682 forward 1	TM	Non-Cytosolic
301	U:243871.4:2001MAY17	1	365 forward 2	TM ·	Non-Cytosolic
301	U:243871.4:2001MAY17	366	385 forward 2	TM	Transmembrane
301	LI:243871.4:2001MAY17	386	391 forward 2	TM	Cytosolic
301	LI:243871.4:2001MAY17	392	414 forward 2	TM	Transmembrane
301	LI:243871.4:2001MAY17	415	464 forward 2	: · TM	Non-Cytosolic
301	LI:243871.4:2001MAY17	465	487 forward 2	TM	Transmembrane
301	LI:243871.4:2001MAY17	488	662 forward 2		Cytosolic
301	LI:243871.4:2001MAY17	663	681 forward 2	TM	Transmembrane
301	LI:243871.4:2001MAY17	682	682 forward 2		Non-Cytosolic
302	LI:245597.7:2001MAY17	1	1382 forward 1	TM	Non-Cytosolic
302	LI:245597.7:2001MAY17	1383	1405 forward 1	TM	Transmembrane
302	LI:245597.7:2001MAY17	1406	1415 forward 1	TM	Cytosolic
302	LI:245597.7:2001MAY17	1	1224 forward 2	TM	Non-Cytosolic
302	LI:245597.7:2001MAY17	1225	1247 forward 2	TM	Transmembrane
302	LI:245597.7:2001MAY17	1248	1267 forward 2	TM	Cytosolic
302	LI:245597.7:2001MAY17	1268	1290 forward 2	TM	Transmembrane
302	LI:245597.7:2001MAY17	1291	1304 forward 2	TM	Non-Cytosolic
302	LI:245597.7:2001MAY17	1305	1324 forward 2	TM	Transmembrane
302	Ц:245597.7:2001MAY17	1325	1366 forward 2	TM	Cytosolic
302	LI:245597.7:2001MAY17	1367	1386 forward 2	TM	Transmembrane
302	LI:245597.7:2001MAY17	1387	1389 forward 2	TM	Non-Cytosolic
302	LI:245597.7:2001MAY17	1390	1407 forward 2	TM	Transmembrane
302	LI:245597.7:2001MAY17	1408	1415 forward 2	TM	Cytosolic
302	LI:245597.7:2001MAY17	1	34 forward 3	TM	Cytosolic
302	LI:245597.7:2001MAY17	35	57 forward 3	TM	Transmembrane
302	LI:245597.7:2001MAY17	58	957 forward 3	TM	Non-Cytosolic
302	U:245597.7:2001МАҮ17	958	980 forward 3	TM	Transmembrane
302	LI:245597.7:2001MAY17	981	1199 forward 3	TM	Cytosolic
302	U:245597.7:2001MAY17		1222 forward 3	TM	Transmembrane
302	Ц:245597.7:2001MAY17		1305 forward 3	TM	Non-Cytosolic
302	LI:245597.7:2001MAY17		1328 forward 3	TM	Transmembrane
302	LI:245597.7:2001MAY17	1329	1369 forward 3	TM	Cytosolic
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SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
302	LI:245597.7:2001MAY17		1392 forward 3	TM	Transmembrane
302	LI:245597.7:2001MAY17	1393	1415 forward 3	TM	Non-Cytosolic
303	LI:256009.31:2001MAY17	1	53 forward 3	TM	Non-Cytosolic
303	LI:256009.31:2001MAY17	54	76 forward 3	TM	Transmembrane
303	LI:256009.31:2001MAY17	77	250 forward 3	TM	Cytosolic
303	LI:256009.31:2001MAY17	251	273 forward 3	TM	Transmembrane
303	LI:256009.31:2001MAY17	274	314 forward 3	TM	Non-Cytosolic
303	LI:256009.31:2001MAY17	315	334 forward 3	TM	Transmembrane
303	LI:256009.31:2001MAY17	335	499 forward 3	TM	Cytosolic
304	LI:262221.1:2001MAY17	1	148 forward 1	TM	Cytosolic
304	U:262221.1:2001MAY17	149	171 forward 1	TM	Transmembrane
304	U:262221.1:2001MAY17	172	732 forward 1	TM	Non-Cytosolic
305	LI:332957.8:2001MAY17	1	300 forward 1	TM	Non-Cytosolic
305	LI:332957.8:2001MAY17	301	323 forward 1	TM	Transmembrane
305	U:332957.8:2001MAY17	324	537 forward 1	TM	Cytosolic
305	LI:332957.8:2001MAY17	538	560 forward 1	TM	Transmembrane
305	LI:332957.8:2001MAY17	.561	1491 forward 1	TM	Non-Cytosolic
305	Ц:332957.8:2001MAY17	1	435 forward 3	TM	Non-Cytosolic
305	LI:332957.8:2001MAY17	436	455 forward 3	TM	Transmembrane
305	LI:332957.8:2001MAY17	456	535 forward 3	TM	Cytosolic
305	LI:332957.8:2001MAY17	536	558 forward 3	TM	Transmembrane
305	LI:332957.8:2001MAY17	559	1027 forward 3	TM	Non-Cytosolic
305	LI:332957.8:2001MAY17	1028	1050 forward 3	TM	Transmembrane
305	LI:332957.8:2001MAY17 .	1051	1062 forward 3	TM	Cytosolic
305	LI:332957.8:2001MAY17	1063	1085 forward 3	TM	Transmembrane
305	LI:332957.8:2001MAY17	1086	1490 forward 3	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	1	144 forward 1	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	145	167 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	168	330 forward 1	TM	Cytosolic
306	LI:335352.13:2001MAY17	331	353 forward 1	TM	·Transmembrane
306	LI:335352.13:2001MAY17	354	425 forward 1	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	426	448 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	449	460 forward 1	TM	Cytosolic
306	U:335352.13:2001MAY17	461	483 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	484	492 forward 1	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	493	510 forward 1	TM	Transmembrane
306	U:335352.13:2001MAY17	511	553 forward 1	TM	Cytosolic
306	LI:335352.13:2001MAY17	554	576 forward 1	TM	Transmembrane
306	U:335352.13:2001MAY17	577	616 forward 1	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	617	639 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	640	645 forward 1	TM	Cytosolic
306	LI:335352.13:2001MAY17	646	668 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	669	766 forward 1	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	767	789 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	790	905 forward 1	TM	Cytosolic
306	LI:335352.13:2001MAY17	906	928 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	929	970 forward 1	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	971	993 forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	994	1046 forward 1	TM	Cytosolic
306	LI:335352.13:2001MAY17	1047	1069 forward 1	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
306	LI:335352.13:2001MAY17		-	forward 1	TM	Non-Cytosolic
306	U:335352.13:2001MAY17	1073	1091	forward 1	TM	Transmembrane
306	LI:335352.13:2001MAY17	1092	1096	forward 1	TM	. Cytosolic
306	LI:335352.13:2001MAY17	1		forward 2	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	428	450	forward 2	TM	Transmembrane
306	LI:335352.13:2001MAY17	451	496	forward 2	TM	Cytosolic
306	LI:335352.13:2001MAY17	497		forward 2	TM	Transmembrane
306	LI:335352.13:2001MAY17	517	-	forward 2	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	520		forward 2	TM	Transmembrane
306	LI:335352.13:2001MAY17	540		forward 2	TM	Cytosolic
306	LI:335352.13:2001MAY17	552		forward 2	TM	Transmembrane
306	LI:335352.13:2001MAY17	575		forward 2	TM	Non-Cytosolic
- 306	LI:335352.13:2001MAY17	658		forward 2	TM	Transmembrane
306	LI:335352.13:2001MAY17	681		forward 2	TM	Cytosolic
306	LI:335352.13:2001MAY17	700		forward 2	TM	Transmembrane
306	LI:335352.13:2001MAY17	720		forward 2	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	1		forward 3	TM	Cytosolic
306	LI:335352.13:2001MAY17	136		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	159		forward 3	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	198		forward 3	. TM	Transmembrane
306	LI:335352.13:2001MAY17	221		forward 3	TM	Cytosolic
306	LI:335352.13:2001MAY17	330		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	353		forward 3	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	455		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	478		forward 3	. TM	Cytosolic
306	LI:335352.13:2001MAY17	498		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	521		forward 3.	TM	Non-Cytosolic
306	Ц:335352.13:2001MAY17	552		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	575		forward 3	TM	Cytosolic
306	LI:335352.13:2001MAY17	594		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	617		forward 3	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17	636		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	659		forward 3	TM	Cytosolic
306	LI:335352.13:2001MAY17	920		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	943		forward 3	TM	Non-Cytosolic
306	U:335352.13:2001MAY17	957		forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	980		forward 3	TM	Cytosolic
306	LI:335352.13:2001MAY17			forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17			forward 3	TM	Non-Cytosolic
306	LI:335352.13:2001MAY17			forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17			forward 3	TM	Cytosolic
306	LI:335352.13:2001MAY17			forward 3	TM	Transmembrane
306	LI:335352.13:2001MAY17	-	—	forward 3	TM	Non-Cytosolic
307	LI:343844.7:2001MAY17	1		forward 2	TM	Non-Cytosolic
307	LI:343844.7:2001MAY17	344		forward 2	TM	Transmembrane
307	LI:343844.7:2001MAY17	367		forward 2	TM	Cytosolic
307	LI:343844.7:2001MAY17	378		forward 2	TM	Transmembrane
307	LI:343844.7:2001MAY17	401		forward 2	TM	Non-Cytosolic
307	LI:343844.7:2001MAY17	405		forward 2	TM	Transmembrane
307	LI:343844.7:2001MAY17	423		forward 2	TM	Cytosolic
507		420	720	IOI WIGHT	****	C7100011C

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
308	U:344528.1:2001MAY17	1	940 forward 1	TM	Non-Cytosolic
308	LI:344528.1:2001MAY17	941	963 forward 1	TM	Transmembrane
308	LI:344528.1:2001MAY17	964	1309 forward 1	TM	Cytosolic
308	LI:344528.1:2001MAY17	1310	1332 forward 1	TM	Transmembrane
308	LI:344528.1:2001MAY17		1349 forward 1	TM	Non-Cytosolic
308	LI:344528.1:2001MAY17	1	853 forward 2	TM	Non-Cytosolic
308	LI:344528.1:2001MAY17	854	876 forward 2	TM	Transmembrane
308	LI:344528.1:2001MAY17	877	929 forward 2	TM	Cytosolic
308	LI:344528.1:2001MAY17	930	952 forward 2	TM	Transmembrane
308	LI:344528.1:2001MAY17	953	1349 forward 2	TM	Non-Cytosolic
309	LI:374578.27:2001MAY17	1	496 forward 1	TM	Cytosolic
309	U:374578.27:2001MAY17	497	519 forward 1	TM	Transmembrane
309	U:374578.27:2001MAY17	520	523 forward 1	TM	Non-Cytosolic
309	LI:374578.27:2001MAY17	1	496 forward 2	TM	Non-Cytosolic
309	LI:374578.27:2001MAY17	497	519 forward 2	TM	Transmembrane
309	LI:374578.27:2001MAY17	520	523 forward 2	TM	Cytosolic
309	LI:374578.27:2001MAY17	1	495 forward 3	TM	Non-Cytosolic
309	U:374578.27:2001MAY17	496	518 forward 3	TM	Transmembrane
309	LI:374578.27:2001MAY17	519	523 forward 3	TM	Cytosolic
310	LI:381993.13:2001MAY17	1	69 forward 1	TM	Cytosolic
310	LI:381993.13:2001MAY17	70	89 forward 1	TM	Transmembrane
310	LI:381993.13:2001MAY17	90.	103 forward 1	TM	Non-Cytosolic
	LI:381993.13:2001MAY17	104	126 forward 1	TM	Transmembrane
310	LI:381993.13:2001MAY17	127	138 forward 1	TM	Cytosolic
310	U:381993.13:2001MAY17	139	161 forward T	TM	Transmembrane
310	LI:381993.13:2001MAY17	162	205 forward 1	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17	206	225 forward 1	TM	Transmembrane
310	LI:381993.13:2001MAY17	226	394 forward 1	TM	Cytosolic
310	LI:381993.13:2001MAY17		417 forward 1	. TM.	Transmembrane
310	LI:381993.13:2001MAY17	418	2098 forward 1	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17		2121 forward 1	TM	Transmembrane
. 310	LI:381993.13:2001MAY17		2239 forward 1	TM	Cytosolic
310	LI:381993.13:2001MAY17	2240	2262 forward 1	TM	Transmembrane
310	LI:381993.13:2001MAY17	2263	2282 forward 1	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17	1	150 forward 2	TM	Cytosolic
310	LI:381993.13:2001MAY17	151	173 forward 2	TM	Transmembrane
310	LI:381993.13:2001MAY17	174	177 forward 2	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17	178	195 forward 2	TM	Transmembrane
310	LI:381993.13:2001MAY17	196	201 forward 2	TM	Cytosolic
310	LI:381993.13:2001MAY17	202	224 forward 2	TM	Transmembrane
310	LI:381993.13:2001MAY17	225	1670 forward 2	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17	1671	1693 forward 2	TM	Transmembrane
310	LI:381993.13:2001MAY17	1694	2196 forward 2	TM	Cytosolic
310	LI:381993.13:2001MAY17	2197	2216 forward 2	TM	Transmembrane
310	LI:381993.13:2001MAY17	2217	2239 forward 2	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17	2240	2262 forward 2	TM	Transmembrane
310	U:381993.13:2001MAY17	2263	2282 forward 2	TM	Cytosolic
310	LI:381993.13:2001MAY17	1	20 forward 3	TM	Cytosolic
310	LI:381993.13:2001MAY17	21	43 forward 3	TM	Transmembrane
310	LI:381993.13:2001MAY17	44	102 forward 3	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
310	LI:381993.13:2001MAY17	103	125 forward 3	TM	Transmembrane
310	LI:381993.13:2001MAY17	126	144 forward 3	TM	Cytosolic
310	LI:381993.13:2001MAY17	145	167 forward 3	TM	Transmembrane
310	LI:381993.13:2001MAY17	168	1179 forward 3	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17		1202 forward 3	TM	Transmembrane
310	LI:381993.13:2001MAY17		1342 forward 3	TM	Cytosolic
310	LI:381993.13:2001MAY17		1362 forward 3	TM	Transmembrane
310	LI:381993.13:2001MAY17		1381 forward 3	TM	Non-Cytosolic
310	U:381993.13:2001MAY17		1401 forward 3	TM	Transmembrane
310	Ц:381993.13:2001MAY17		1421 forward 3	TM	Cytosolic
310	LI:381993.13:2001MAY17		1444 forward 3	TM	Transmembrane
310	LI:381993.13:2001MAY17		1453 forward 3	TM	Non-Cytosolic
310	LI:381993.13:2001MAY17		1471 forward 3	TM	Transmembrane
310	LI:381993.13:2001MAY17		1477 forward 3	TM	Cytosolic
310	L:381993.13:2001MAY17		1500 forward 3	TM	Transmembrane
310	L:381993.13:2001MAY17		2282 forward 3	TM	Non-Cytosolic
311	LI:400373.2:2001MAY17	1	145 forward 1	TM	Non-Cytosolic
311	LI:400373.2:2001MAY17	146	168 forward 1	TM	Transmembrane
311	L:400373.2:2001MAY17	169	469 forward 1	TM	Cytosolic
311	L:400373.2:2001MAY17	470	492 forward 1	TM	Transmembrane
311	LI:400373.2:2001MAY17	493	1295 forward 1	TM	Non-Cytosolic
311	LI:400373.2:2001MAY17	1	1245 forward 2	TM	Non-Cytosolic
311	LI:400373.2:2001MAY17	•	1268 forward 2	TM	Transmembrane
311	L:400373.2:2001MAY17		1295 forward 2	TM	Cytosolic
. 311	L:400373.2:2001MAY17	1207	850 forward 3	TM	Non-Cytosolic
311	L:400373.2:2001MAY17	851	873 forward 3	TM	Transmembrane
311	L:400373.2:2001MAY17	874	1049 forward 3	TM	Cytosolic
311	L:400373.2:2001MAY17		1072 forward 3	TM	Transmembrane
311	L:400373.2:2001MAY17		1231 forward 3	TM	Non-Cytosolic
311	LI:400373.2:2001MAY17		1254 forward 3	TM	Transmembrane
311	LI:400373.2:2001MAY17		1258 forward 3	TM	Cytosolic
311	LI:400373.2:2001MAY17		1281 forward 3	TM	Transmembrane
311	LI:400373.2:2001MAY17		1295 forward 3	TM	Non-Cytosolic
312	LI:400963.6:2001MAY17	1	1292 forward 2	TM	Non-Cytosolic
312	L:400963.6:2001MAY17	•	1315 forward 2	TM	Transmembrane
312	LI:400963.6:2001MAY17		1318 forward 2	TM	Cytosolic
313	LI:404874.8:2001MAY17	10.0	1121 forward 2	TM	Non-Cytosolic
313	LI:404874.8:2001MAY17	•	1144 forward 2	TM	Transmembrane
313	LI:404874.8:2001MAY17		1150 forward 2	TM	Cytosolic
313	LI:404874.8:2001MAY17		1173 forward 2	TM	Transmembrane
313	LI:404874.8:2001MAY17		1200 forward 2	TM	Non-Cytosolic
313	L:404874.8:2001MAY17		1223 forward 2	TM	Transmembrane
313	L:404874.8:2001MAY17		1245 forward 2	TM	Cytosolic
313	LI:404874.8:2001MAY17	1224	1029 forward 3	TM	Non-Cytosolic
313	LI:404874.8:2001MAY17	•	1052 forward 3	TM	Transmembrane
313	L:404874.8:2001MAY17		1123 forward 3	TM	Cytosolic
313	L:404874.8:2001MAY17		1123 forward 3	TM	Transmembrane
313	L:404874.8:2001MAY17		1190 forward 3	TM	Non-Cytosolic
313	L:404874.8:2001MAY17		1213 forward 3	TM	Transmembrane
313	L:404874.8:2001MAY17		1213 forward 3	TM	
313	LI.404074.0.200 HVI/AT [7	1214	1244 IOIWala 3	IIVI	Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
314	LI:405158.18:2001MAY17	1	1358 forward 1	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17	1359	1381 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17	1382	1470 forward 1	TM	Cytosolic
314	LI:405158.18:2001MAY17	1471	1493 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17	1494	1518 forward 1	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17	1519	1541 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17	1542	1629 forward 1	TM	Cytosolic
314	LI:405158.18:2001MAY17		1652 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17		1753 forward 1	TM .	Non-Cytosolic
314	LI:405158.18:2001MAY17		1776 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17		1847 forward 1	TM	Cytosolic
314	LI:405158.18:2001MAY17		1870 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17		1974 forward 1	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17		1997 forward 1	TM	Transmembrane
314	Ц:405158.18:2001MAY17		2009 forward 1	TM	Cytosolic
314	LI:405158.18:2001MAY17		2032 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17		2059 forward 1	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17		2082 forward 1	TM	Transmembrane
314	LI:405158.18:2001MAY17		2248 forward 1	TM	Cytosolic
314	LI:405158.18:2001MAY17	2000	1266 forward 2	TM	Non-Cytosolic
314	L:405158.18:2001MAY17	•	1289 forward 2	TM	Transmembrane
314	L:405158.18:2001MAY17		1510 forward 2	TM	-Cytosolic
	L:405158.18:2001MAY17		1533 forward 2	TM	Transmembrane
314	L:405158.18:2001MAY17		1757 forward 2	TM	
314	L:405158.18:2001MAY17		1737 forward 2	TM	Non-Cytosolic
314			1786 forward 2	TM	Transmembrane
	LI:405158.18:2001MAY17				Cytosolic
314	LI:405158.18:2001MAY17		1809 forward 2	TM	Transmembrane
314	LI:405158.18:2001MAY17		1823 forward 2	TM	Non-Cytosolic
314	L:405158.18:2001MAY17		1846 forward 2	TM	Transmembrane
314	LI:405158.18:2001MAY17		1914 forward 2 1937 forward 2	TM	Cytosolic
314	LI:405158.18:2001MAY17			TM	Transmembrane
314	L:405158.18:2001MAY17		1975 forward 2	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17		1998 forward 2	TM	Transmembrane
314	LI:405158.18:2001MAY17		2017 forward 2	TM	Cytosolic
314	LI:405158.18:2001MAY17		2040 forward 2	TM	Transmembrane
314	LI:405158.18:2001MAY17		2059 forward 2	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17		2082 forward 2	TM	Transmembrane -
314	LI:405158.18:2001MAY17		2144 forward 2	TM	Cytosolic
314	LI:405158.18:2001MAY17		2167 forward 2	TM .	Transmembrane
314	LI:405158.18:2001MAY17		2181 forward 2	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17		2204 forward 2	TM .	Transmembrane
314	LI:405158.18:2001MAY17		2224 forward 2	TM	Cytosolic
314	LI:405158.18:2001MAY17		2247 forward 2	TM	Transmembrane
314	LI:405158.18:2001MAY17	_	2248 forward 2	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17	1	445 forward 3	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17	446	468 forward 3	TM	Transmembrane
314	LI:405158.18:2001MAY17	469	497 forward 3	TM	Cytosolic
314	LI:405158.18:2001MAY17	498	515 forward 3	TM	Transmembrane
314	U:405158.18:2001МАY17	516	1821 forward 3	TM	Non-Cytosolic
314	U:405158.18:2001MAY17	1822	1844 forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
314	U:405158.18:2001MAY17	1845	1902	forward 3	TM	Cytosolic
314	LI:405158.18:2001MAY17	1903	1925	forward 3	TM	Transmembrane
314	LI:405158.18:2001MAY17	1926	1944	forward 3	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17	1945	1967	forward 3	TM	Transmembrane
314	U:405158.18:2001MAY17	1968	1979	forward 3	TM	Cytosolic
314	LI:405158.18:2001MAY17	1980	1998	forward 3	TM	Transmembrane
314	LI:405158.18:2001MAY17	1999	2017	forward 3	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17	2018	2040	forward 3	TM	Transmembrane
314	LI:405158.18:2001MAY17	2041	2060	forward 3	TM	Cytosolic
314	LI:405158.18:2001MAY17	2061	2083	forward 3	TM	Transmembrane
314	LI:405158.18:2001MAY17			forward 3	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17	2098	2120	forward 3	TM	Transmembrane
314	LI:405158.18:2001MAY17			forward 3	TM	Cytosolic
314	LI:405158.18:2001MAY17			forward 3	TM	Transmembrane
314	LI:405158.18:2001MAY17			forward 3	TM	Non-Cytosolic
314	LI:405158.18:2001MAY17			forward 3	· TM	Transmembrane
314	LI:405158.18:2001MAY17	2232	2247	forward 3	TM	Cytosolic
315	LI:405889.22:2001MAY17	1		forward 3	TM	Non-Cytosolic
315	LI:405889.22:2001MAY17	173		forward 3	TM	Transmembrane
315	LI:405889.22:2001MAY17	196		forward 3	TM	Cytosolic
315	LI:405889.22:2001MAY17	410		forward 3	TM	Transmembrane
315	LI:405889.22:2001MAY17	. 433	707	forward 3	TM	Non-Cytosolic
316	Ц:411151.31:2001MAY17	1		forward 2	TM	Non-Cytosolic
. 316	U:411151.31:2001МАҮ17	1127	1149	forward 2	TM	Transmembrane
316	LI:411151.31:2001MAY17	1150		forward 2	TM	Cytosolic
316	Ц:411151.31:2001MAY17	1161		forward 2	TM	Transmembrane
. 316	U:411151.31:2001МАҮ17	1184	1197	forward 2	TM	Non-Cytosolic
316	Ц:411151.31:2001MAY17	1198	1220	forward 2	TM	Transmembrane
316	LI:411151.31:2001MAY17	1221	1239	forward 2	TM	Cytosolic
316	LI:411151.31:2001MAY17	1240	1262	forward 2	TM	Transmembrane
316	LI:411151.31:2001MAY17	1263	1481	forward 2	TM	Non-Cytosolic
317	LI:411313.51:2001MAY17	1	1039	forward 3	TM	Non-Cytosolic
317	LI:411313.51:2001MAY17	1040	1062	forward 3	· TM	Transmembrane
317 ·	LI:411313.51:2001MAY17	1063	1085	forward 3	TM	Cytosolic
317	Ц:411313.51:2001MAY17	1086	1108	forward 3	TM	Transmembrane
317	Ц:411313.51:2001MAY17	1109	1152	forward 3	TM	Non-Cytosolic
318	LI:417127.1:2001MAY17	1	44	forward 2	TM	Non-Cytosolic
318	LI:417127.1:2001MAY17	45	67	forward 2	TM	Transmembrane
318	LI:417127.1:2001MAY17	68	210	forward 2	TM	Cytosolic
319	LI:429817.44:2001MAY17	1	407	forward 1	TM	Non-Cytosolic
319	LI:429817.44:2001MAY17	408	430	forward 1	TM	Transmembrane
319	LI:429817.44:2001MAY17	431	442	forward 1	TM	Cytosolic
319	LI:429817.44:2001MAY17	443	465	forward 1	TM	Transmembrane
319	LI:429817.44:2001MAY17	466	474	forward 1	TM	Non-Cytosolic
319	LI:429817.44:2001MAY17	475	492	forward 1	TM	Transmembrane
319	LI:429817.44:2001MAY17	493	574	forward 1	TM	Cytosolic
319	U:429817.44:2001MAY17	575	597	forward 1	TM	Transmembrane
319	LI:429817.44:2001MAY17	598	611	forward 1	TM	Non-Cytosolic
319	LI:429817.44:2001MAY17	612	634	forward 1	TM	Transmembrane
319	LI:429817.44:2001MAY17	635	655	forward 1	TM	Cytosolic

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
319	U:429817.44:2001МАҮ17	1	262	forward 2	TM	Cytosolic
319	Ц:429817.44:2001МАҮ17	263	285	forward 2	TM	Transmembrane
319	LI:429817.44:2001MAY17	286	361	forward 2	TM	Non-Cytosolic
319	LI:429817.44:2001MAY17	362	384	forward 2	TM	Transmembrane
319	LI:429817.44:2001MAY17	385	390	forward 2	TM	Cytosolic
319	LI:429817.44:2001MAY17	391	413	forward 2	TM	Transmembrane
319	LI:429817.44:2001MAY17	414	422	forward 2	TM	Non-Cytosolic
319	LI:429817.44:2001MAY17	423	445	forward 2	TM	Transmembrane
319	LI:429817.44:2001MAY17	446	583	forward 2	TM	Cytosolic
319	LI:429817.44:2001MAY17	584	603	forward 2	TM	Transmembrane
319	U:429817.44:2001MAY17	604	612	forward 2	TM	Non-Cytosolic
319	U:429817.44:2001MAY17	613	635	forward 2	TM	Transmembrane
319	LI:429817.44:2001MAY17	636	654	forward 2	TM	Cytosolic
319	LI:429817.44:2001MAY17	1	262	forward 3	TM	Non-Cytosolic
319	LI:429817.44:2001MAY17	263	285	forward 3	TM	Transmembrane
319	LI:429817.44:2001MAY17	286	410	forward 3	TM	Cytosolic
319	LI:429817.44:2001MAY17	411	433	forward 3	TM	Transmembrane
319	LI:429817.44:2001MAY17	434	442	forward 3	TM	Non-Cytosolic
319	LI:429817.44:2001MAY17	443	465	forward 3	TM	Transmembrane
319	U:429817.44:2001МАҮ17	466	566	forward 3	TM	Cytosolic
319	LI:429817.44:2001MAY17	567	589	forward 3	TM	Transmembrane
319	LI:429817.44:2001MAY17	590	610	forward 3	TM ·	Non-Cytosolic
319	LI:429817.44:2001MAY17	611	633	forward 3	TM	Transmembrane
319	LI:429817.44:2001MAY17	634	654	foiward 3	TM	Cytosolic
320	LI:474134.23:2001MAY17	· 1	329	forward 3	TM	Non-Cytosolic
320	LI:474134.23:2001MAY17	330	352	forward 3	· TM	Transmembrane
320	U:474134.23:2001MAY17	353	364	forward 3	TM	Cytosolic .
320·	LI:474134.23:2001MAY17	365	382	forward 3	TM	Transmembrane
320	LI:474134.23:2001MAY17	383	647	forward 3	· TM	Non-Cytosolic
.321	LI:475378.3:2001MAY17	1	1181	forward 3	TM	Non-Cytosolic
321	LI:475378.3:2001MAY17	1182	1204	forward 3	TM	Transmembrane
321	LI:475378.3:2001MAY17	1205	1393	forward 3	TM	Cytosolic
321	L:475378.3:2001MAY17	1394	1416	forward 3	TM	Transmembrane
321	LI:475378.3:2001MAY17	1417	1430	forward 3	TM	Non-Cytosolic
321	LI:475378.3:2001MAY17	1431	1453	forward 3	TM	Transmembrane
321	Ц:475378.3:2001MAY17	1454	1473	forward 3	TM	Cytosolic
321	U:475378.3:2001MAY17	1474	1496	forward 3	TM	Transmembrane
321	U:475378.3:2001MAY17	1497	1541	forward 3	TM	Non-Cytosolic
321	U:475378.3:2001MAY17	1542	1564	forward 3	TM	Transmembrane
321	Ц:475378.3:2001MAY17	1565	1576	forward 3	ΤM	Cytosolic
321	U:475378.3:2001MAY17	1577	1599	forward 3	TM	Transmembrane
321	Ц:475378.3:2001MAY17	1600	1612	forward 3	TM	Non-Cytosolic
322	LI:749588.15:2001MAY17	1	843	forward 1	TM	Non-Cytosolic
322	U:749588.15:2001MAY17	844		forward 1	TM	Transmembrane
322	U:749588.15:2001MAY17	867		forward 1	TM	Cytosolic
322	LI:749588.15:2001MAY17			forward 1	TM	Transmembrane
322	LI:749588.15:2001MAY17	1039		forward 1	TM	Non-Cytosolic
322	U:749588.15:2001MAY17	1		forward 3	TM	Cytosolic
322	LI:749588.15:2001MAY17	88		forward 3	TM	Transmembrane
322	U:749588.15:2001MAY17	111	762	forward 3	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
322	LI:749588.15:2001MAY17	763	785	forward 3	TM	Transmembrane
322	LI:749588.15:2001MAY17	786	926	forward 3	TM	Cytosolic
322	LI:749588.15:2001MAY17	927	949	forward 3	TM	Transmembrane
322	LI:749588.15:2001MAY17	950	1278	forward 3	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17	1	1369	forward 1	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17	1370	1392	forward 1	TM	Transmembrane
323	LI:757736.17:2001MAY17	1393	1398	forward 1	TM	Cytosolic
323	LI:757736.17:2001MAY17	1399	1421	forward 1	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 1	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17			forward 1	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 1	TM	Cytosolic
323	LI:757736.17:2001MAY17			forward 1	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 1	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17	. 1		forward 2	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17	1416		forward 2	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 2	TM	Cytosolic
323	LI:757736.17:2001MAY17			forward 2	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 2	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17			forward 2	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 2	TM	Cytosolic
323	LI:757736.17:2001MAY17			forward 2	TM	Transmembrane
323	LI:757736.17:2001MAY17 .			forward 2	TM	Non-Cytosolic
	LI:757736.17:2001MAY17	1		forward 3	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17	1419		forward 3	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 3	TM	Cytosolic
323 .	Ц:757736.17:2001MAY17			forward 3	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 3	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17			forward 3	TM	Transmembrane
	Li:757736.17:2001MAY17			forward 3	TM	Cytosolic
323	LI:757736.17:2001MAY17			forward 3	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 3	TM	Non-Cytosolic
323	Ц:757736.17:2001MAY17			forward 3	TM	Transmembrane
323	Ц:757736.17:2001MAY17			forward 3	TM	Cytosolic
323	LI:757736.17:2001MAY17			forward 3	TM	Transmembrane
323	U:757736.17:2001MAY17			forward 3	TM	Non-Cytosolic
323	LI:757736.17:2001MAY17			forward 3	TM	Transmembrane
323	LI:757736.17:2001MAY17			forward 3	TM	Cytosolic
324	LI:817278.4:2001MAY17	1		forward 2	TM	Cytosolic
325	LI:027320.5:2001MAY17	ì		forward 1	TM	Cytosolic
325	U:027320.5:2001MAY17	199		forward 1	TM	Transmembrane
325	LI:027320.5:2001MAY17	222		forward 1	TM	Non-Cytosolic
325	LI:027320.5:2001MAY17	280		forward 1	TM	Transmembrane
325	LI:027320.5:2001MAY17	303		forward 1	TM	Cytosolic
325	LI:027320.5:2001MAY17	323		forward 1	TM	Transmembrane
325	LI:027320.5:2001MAY17	346		forward 1	TM	Non-Cytosolic
325	LI:027320.5:2001MAY17	349		forward 1	TM	Transmembrane
325	LI:027320.5:2001MAY17	372		forward 1	TM	Cytosolic
325	LI:027320.5:2001MAY17	1		forward 2	TM	Cytosolic
325	LI:027320.5:2001MAY17	195		forward 2	TM	Transmembrane
325	L:027320.5:2001МАY17	218		forward 2	TM	Non-Cytosolic
020		210	<u> </u>	JUNGIO Z	****	11011 091030110

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
325	LI:027320.5:2001MAY17	242	-	forward 2	TM	Transmembrane
325	U:027320.5:2001MAY17	265	276	forward 2	TM	Cytosolic
325	U:027320.5:2001MAY17	277	299	forward 2	TM	Transmembrane
325	LI:027320.5:2001MAY17	300	341	forward 2	TM	Non-Cytosolic
325	LI:027320.5:2001MAY17	342	359	forward 2	TM	Transmembrane
325	U:027320.5:2001MAY17	360	429	forward 2	TM	Cytosolic
326	LI:204635.5:2001MAY17	1	4	forward 3	TM	Non-Cytosolic
326	LI:204635.5:2001MAY17	5	24	forward 3	TM	Transmembrane
326	LI:204635.5:2001MAY17	25	211	forward 3	TM	Cytosolic
326	LI:204635.5:2001MAY17	212		forward 3	TM	Transmembrane
326	LI:204635.5:2001MAY17	232	305	forward 3	TM	Non-Cytosolic
327	LI:215532.38:2001MAY17	1		forward 2	TM	Non-Cytosolic
327	LI:215532.38:2001MAY17	255	277	forward 2	TM	Transmembrane
327	LI:215532.38:2001MAY17	278		forward 2	TM	Cytosolic
327	LI:215532.38:2001MAY17	289	311	forward 2	TM	Transmembrane
327	LI:215532.38:2001MAY17	312	490	forward 2	TM	Non-Cytosolic
327	LI:215532.38:2001MAY17	1	66	forward 3	TM	Cytosolic
327	LI:215532.38:2001MAY17	67	89	forward 3	TM	Transmembrane
327	U:215532.38:2001MAY17	90	98	forward 3	TM	Non-Cytosolic
327	LI:215532.38:2001MAY17	99	121	forward 3	TM	Transmembrane
327	U:215532.38:2001MAY17	122	125	forward 3	TM	Cytosolic
327	LI:215532.38:2001MAY17	126	143	forward 3	TM	Transmembrane
327	LI:215532.38:2001MAY17	144	490	forward 3	TM	Non-Cytosolic
328	LI:228319.6:2001MAY17	1	208	forward 3	TM	Cytosolic
328	LI:228319.6:2001MAY17	209	231	forward 3	TM	Transmembrane
328	LI:228319.6:2001MAY17	232	312	forward 3	TM	Non-Cytosolic
328	LI:228319.6:2001MAY17	313	335	forward 3	TM	Transmembrane .
328	LI:228319.6:2001MAY17	336	363	forward 3	TM	Cytosolic
329	LI:236589.24:2001MAY17	1	1304	forward 2	TM	Non-Cytosolic
329	LI:236589.24:2001MAY17	1305	1327	forward 2	TM .	Transmembrane
329	LI:236589.24:2001MAY17	1328	1341	forward 2	TM	Cytosolic
330	LI:247444.3:2001MAY17	1	415	forward 1	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	416	433	forward 1	TM	Transmembrane
330	LI:247444.3:2001MAY17	434	499	forward 1	TM	Cytosolic
330	LI:247444.3:2001MAY17	500	522	forward 1	TM	Transmembrane
330	LI:247444.3:2001MAY17	523	541	forward 1	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	542	564	forward 1	TM	Transmembrane
330	LI:247444.3:2001MAY17	565	595	forward 1	TM	Cytosolic
330	U:247444.3:2001MAY17	1	46	forward 2	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	47	69	forward 2	TM	Transmembrane
330	LI:247444.3:2001MAY17	70	80	forward 2	TM	Cytosolic
330	LI:247444.3:2001MAY17	81	98	forward 2	TM	Transmembrane
330	LI:247444.3:2001MAY17	99	101	forward 2	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	102	124	forward 2	TM	Transmembrane
330	LI:247444.3:2001MAY17	125	329	forward 2	TM	Cytosolic
330	LI:247444.3:2001MAY17	330	352	forward 2	TM	Transmembrane
330	LI:247444.3:2001MAY17	353	412	forward 2	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	413	435	forward 2	TM	Transmembrane
330	LI:247444.3:2001MAY17	436	447	forward 2	TM	Cytosolic
330	LI:247444.3:2001MAY17	448	470	forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
330	LI:247444.3:2001MAY17	471	493	forward 2	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	494	516	forward 2	ΤM	Transmembrane
330	LI:247444.3:2001MAY17	517	522	forward 2	TM	Cytosolic
330	LI:247444.3:2001MAY17	523	545	forward 2	TM	Transmembrane
330	LI:247444.3:2001MAY17	546	594	forward 2	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	1	337		TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	338	360	forward 3	TM	Transmembrane
330	LI:247444.3:2001MAY17	361	451		TM	Cytosolic
330	LI:247444.3:2001MAY17	452	471		TM	Transmembrane
330	LI:247444.3:2001MAY17	472		forward 3	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	486		forward 3	TM	Transmembrane
330	LI:247444.3:2001MAY17	509		forward 3	TM	Cytosolic
330	LI:247444.3:2001MAY17	513		forward 3	TM	Transmembrane
330	LI:247444.3:2001MAY17	536		forward 3	TM	Non-Cytosolic
330	LI:247444.3:2001MAY17	540		forward 3	TM	Transmembrane
330	LI:247444.3:2001MAY17	563		forward 3	TM	Cytosolic
331	LI:332404.20:2001MAY17	1		forward 3	TM	Non-Cytosolic
331	LI:332404.20:2001MAY17	1011		forward 3	TM	Transmembrane
331	LI:332404.20:2001MAY17	1029		forward 3	TM	Cytosolic
368	LG:1045509.22:2001JUN22	1027	29	forward 2	TM	Cytosolic
368	LG:1045509.22:2001JUN22	30	52	forward 2	TM	- Transmembrane
368	LG:1045509.22:2001JUN22	53	66	forward 2	TM	Non-Cytosolic
368	LG:1045509.22:2001JUN22	67	89	forward 2	TM	Transmembrane
368 .	LG:1045509.22:2001JUN22	90	367	forward 2	TΜ	Cytosolic
368	LG:1045509.22:2001JUN22	368		forward 2	TM	Transmembrane
368 ·	LG:1045509.22:2001JUN22	391		forward 2	TM	Non-Cytosolic
368	LG:1045509.22:2001JUN22	400		forward 2	TM	Transmembrane
368	LG:1045509.22:2001JUN22	423		forward 2	TM	Cytosolic
369	LG:246935.4:2001JUN22	1	11	forward 1	TM	Cytosolic
369	LG:246935.4:2001JUN22	12	34	forward 1	TM	Transmembrane
. 369	LG:246935.4:2001JUN22	35	-	forward 1	TM	Non-Cytosolic
369	LG:246935.4:2001JUN22	439	461	forward 1	TM	Transmembrane
369	LG:246935.4:2001JUN22	462		forward 1	TM	Cytosolic
369	LG:246935.4:2001JUN22	482		forward 1	TM	Transmembrane
369	LG:246935.4:2001JUN22	505		forward 1	TM	Non-Cytosolic
369	LG:246935.4:2001JUN22	1	12	forward 2	TM	Cytosolic
369	LG:246935.4:2001JUN22	13	35	forward 2	TM	Transmembrane
369	LG:246935.4:2001JUN22	36	39	forward 2	TM	Non-Cytosolic
369	LG:246935.4:2001JUN22	40	59	forward 2	· TM	Transmembrane
369	LG:246935.4:2001JUN22	60	71	forward 2	TM	Cytosolic
369	LG:246935.4:2001JUN22	72	94	forward 2	TM	Transmembrane
369	LG:246935.4:2001JUN22	95	•	forward 2	TM	Non-Cytosolic
369	LG:246935.4:2001JUN22	881		forward 2	TM	Transmembrane
	LG:246935.4:2001JUN22			forward 2	TM	
369 360	LG:246935.4:2001JUN22	904				Cytosolic
369 360] 12		forward 3	TM TM	Cytosolic
369 360	LG:246935.4:2001JUN22	13		forward 3	TM TNA	Transmembrane
369	LG:246935.4:2001JUN22	36		forward 3	TM	Non-Cytosolic
369	LG:246935.4:2001JUN22	870		forward 3	TM	Transmembrane
369	LG:246935.4:2001JUN22	893	_	forward 3	TM TNA	Cytosolic
370	LG:321069.2:2001JUN22	1	630	forward 1	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
370	LG:321069.2:2001JUN22	631	653 forward 1	TM	Transmembrane
. 370	LG:321069.2:2001JUN22	654	665 forward 1	TM	Cytosolic
370	LG:321069.2:2001JUN22	666	688 forward 1	TM	Transmembrane
370	LG:321069.2:2001JUN22	689	702 forward 1	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	703	725 forward 1	TM	Transmembrane
370	LG:321069.2:2001JUN22	726	886 forward 1	TM	Cytosolic
370	LG:321069.2:2001JUN22	887	909 forward 1	TM	Transmembrane
370	LG:321069.2:2001JUN22	910	1343 forward 1	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	1	634 forward 2	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	635	653 forward 2	TM	Transmembrane
370	LG:321069.2:2001JUN22	654	664 forward 2	TM	Cytosolic
370	LG:321069.2:2001JUN22	665	687 forward 2	TM	Transmembrane
370	LG:321069.2:2001JUN22	688	806 forward 2	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	807	829 forward 2	TM	Transmembrane
370	LG:321069.2:2001JUN22	830	1078 forward 2	TM	Cytosolic
370	LG:321069.2:2001JUN22		1101 forward 2	TM	Transmembrane
370	LG:321069.2:2001JUN22		1127 forward 2	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	1128	1150 forward 2	TM	Transmembrane
370	LG:321069.2:2001JUN22	1151	1343 forward 2	TM	Cytosolic
370	LG:321069.2:2001JUN22	1	448 forward 3	TM	Cytosolic
370	LG:321069.2:2001JUN22	449	468 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	. 469	477 forward 3	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	478	500 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	501	506 forward 3	TM	Cytosolic
370	LG:321069.2:2001JUN22	507	529 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	530	630 forward 3	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	631	653 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	654	665 forward 3	TM	Cytosolic
370	LG:321069.2:2001JUN22	666	688 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	689	692 forward 3	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	693	712 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	713	1070 forward 3	TM	Cytosolic
370	LG:321069.2:2001JUN22	1071	1093 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	1094	1102 forward 3	TM	Non-Cytosolic
370	LG:321069.2:2001JUN22	1103	1122 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	1123	1128 forward 3	TM ·	Cytosolic
370	LG:321069.2:2001JUN22	1129	1151 forward 3	TM	Transmembrane
370	LG:321069.2:2001JUN22	1152	1343 forward 3	TM	Non-Cytosolic
371	LG:346724.14:2001JUN22	1	380 forward 1	TM	Non-Cytosolic
371	LG:346724.14:2001JUN22	381	400 forward 1	TM	Transmembrane
371	LG:346724.14:2001JUN22	401	497 forward 1	TM	Cytosolic
371	LG:346724.14:2001JUN22	498	520 forward 1	TM	Transmembrane
371	LG:346724.14:2001JUN22	521	599 forward 1	TM	Non-Cytosolic
371	LG:346724.14:2001JUN22	600	622 forward 1	TM	Transmembrane
371	LG:346724.14:2001JUN22	623	877 forward 1	TM	Cytosolic
371	LG:346724.14:2001JUN22	878	900 forward 1	TM	Transmembrane
371	LG:346724.14:2001JUN22	901	948 forward 1	TM	Non-Cytosolic
371	LG:346724.14:2001JUN22	949	971 forward 1	TM	Transmembrane
371	LG:346724.14:2001JUN22	972	1014 forward 1	TM	Cytosolic
371	LG:346724.14:2001JUN22	1015	1037 forward 1	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
371	LG:346724.14:2001JUN22	1038	1090 forward 1	TM	Non-Cytosolic
371	LG:346724.14:2001JUN22	1	11 forward 2	TM	Cytosolic
371	LG:346724.14:2001JUN22	12	34 forward 2	TM	Transmembrane
371	LG:346724.14:2001JUN22	35	497 forward 2	TM	Non-Cytosolic
371	LG:346724.14:2001JUN22	498	520 forward 2	TM	Transmembrane
371	LG:346724.14:2001JUN22	521	783 forward 2	TM	Cytosolic
371	LG:346724.14:2001JUN22	784	801 forward 2	TM	Transmembrane
371	LG:346724.14:2001JUN22	802	879 forward 2	TM	Non-Cytosolic
371	LG:346724.14:2001JUN22	880	902 forward 2	TM	Transmembrane
371	LG:346724.14:2001JUN22	903	1090 forward 2	TM	Cytosolic
372	LG:411043.3:2001JUN22	1	121 forward 3	TM	Cytosolic
372	LG:411043.3:2001JUN22	122	144 forward 3	TM	Transmembrane
372	LG:411043.3:2001JUN22	145	203 forward 3	TM	Non-Cytosolic
372	LG:411043.3:2001JUN22	204	223 forward 3	TM	Transmembrane
372	LG:411043.3:2001JUN22	224	458 forward 3	TM	Cytosolic
372	LG:411043.3:2001JUN22	459	481 forward 3	TM	Transmembrane
372	LG:411043.3:2001JUN22	482	707 forward 3	TM	Non-Cytosolic
373	LG:978620.7:2001JUN22	1	490 forward 2	TM	Non-Cytosolic
373	LG:978620.7:2001JUN22	491	513 forward 2	TM	Transmembrane
373	LG:978620.7:2001JUN22	514	515 forward 2	TM	Cytosolic
373	LG:978620.7:2001JUN22	. 1	351 forward 3	- TM	Non-Cytosolic
373	LG:978620.7:2001JUN22	352	374 forward 3	TM	Transmembrane
	LG:978620.7:2001JUN22	375	514 forward 3	TM	Cytosolic
374	LG:982784.1:2001JUN22	1	315 forward 1	TM	Non-Cytosolic
374	LG:982784.1:2001JUN22	316	338 forward 1	TM	Transmembrane
374	LG:982784.1:2001JUN22	339	358 forward 1	MT	Cytosolic
374	LG:982784.1:2001JUN22	. 359	381 forward 1	TM	Transmembraine
374	LG:982784.1:2001JUN22	382	682 forward 1	TM	Non-Cytosolic
374	LG:982784.1:2001JUN22	683	705 forward 1	TM	Transmembrane
374	LG:982784.1:2001JUN22 .	706	715 forward 1	TM	Cytosolic
374	LG:982784.1:2001JUN22	1	359 forward 2	TM	Non-Cytosolic
374	LG:982784.1:2001JUN22	360	382 forward 2	TM	Transmembrane
374	LG:982784.1:2001JUN22	383	715 forward 2	TM	Cytosolic
374	LG:982784.1:2001JUN22	1	227 forward 3	TM	Cytosolic
374	LG:982784.1:2001JUN22	228	246 forward 3	TM	Transmembrane
374	LG:982784.1:2001JUN22	247	255 forward 3	TM	Non-Cytosolic
374	LG:982784.1:2001JUN22	256	278 forward 3	TM	Transmembrane
374	LG:982784.1:2001JUN22	279	358 forward 3	TM	Cytosolic
374	LG:982784.1:2001JUN22	359	376 forward 3	TM	Transmembrane
374	LG:982784.1:2001JUN22	377	398 forward 3	TM	Non-Cytosolic
374	LG:982784.1:2001JUN22	399	421 forward 3	TM	Transmembrane
374	LG:982784.1:2001JUN22	422	433 forward 3	TM	Cytosolic
374	LG:982784.1:2001JUN22	434	456 forward 3	TM	Transmembrane
374	LG:982784.1:2001JUN22	457	475 forward 3	TM	Non-Cytosolic
374	LG:982784.1:2001JUN22	476	498 forward 3	TM	Transmembrane
374	LG:982784.1:2001JUN22	499	715 forward 3	TM	Cytosolic
375 375	LG:007574.21:2001JUN22]	6 forward 3	TM	Cytosolic
375	LG:007574.21:2001JUN22	7	29 forward 3	TM	Transmembrane
375	LG:007574.21:2001JUN22	30	38 forward 3	TM	Non-Cytosolic
375	LG:007574.21:2001JUN22	39	56 forward 3	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
375	LG:007574.21:2001JUN22	57	89	forward 3	TM	Cytosolic
375	LG:007574.21:2001JUN22	90	112	forward 3	TM	Transmembrane
375	LG:007574.21:2001JUN22	113	1684	forward 3	TM	Non-Cytosolic
376	LG:013856.18:2001JUN22	1	1178	forward 1	TM	Non-Cytosolic
376	LG:013856.18:2001JUN22	1179	1201	forward 1	TM	Transmembrane
376	LG:013856.18:2001JUN22			forward 1	TM	Cytosolic
376	LG:013856.18:2001JUN22	1		forward 2	TM	Non-Cytosolic
376	LG:013856.18:2001JUN22	899		forward 2	TM	Transmembrane
376	LG:013856.18:2001JUN22	922		forward 2	TM .	Cytosolic
376	LG:013856.18:2001JUN22			forward 2	TM	Transmembrane
376	LG:013856.18:2001JUN22			forward 2	TM	Non-Cytosolic
376	LG:013856.18:2001JUN22	1	11	forward 3	TM	Cytosolic
376	LG:013856.18:2001JUN22	12	34	forward 3	TM	Transmembrane
376	LG:013856.18:2001JUN22	35	_	forward 3	TM	Non-Cytosolic
377	LG:027320.7:2001JUN22	1		forward 2	TM	Cytosolic
377	LG:027320.7:2001JUN22	195		forward 2	TM .	Transmembrane
377	LG:027320.7:2001JUN22	218		forward 2	TM	Non-Cytosolic
377	LG:027320.7:2001JUN22	237		forward 2	TM	Transmembrane
377	LG:027320.7:2001JUN22	260		forward 2	TM	Cytosolic
377	LG:027320.7:2001JUN22	376		forward 2	TM	Transmembrane
377	LG:027320.7:2001JUN22	399		forward 2	TM	Non-Cytosolic
377	LG:027320.7:2001JUN22	424		forward 2	. TM	Transmembrane
. 377	LG:027320.7:2001JUN22			forward 2	TM	Cytosolic
377	LG:027320.7:2001JUN22	. 458		forward 2	TM	Transmembrane
377	LG:027320.7:2001JUN22	476		forward 2	TM	Non-Cytosolic
377 377	LG:027320.7:2001JUN22	485		forward 2	TM	Transmembrane
377 377	LG:027320.7:2001JUN22	508		forward 2	. TM	Cytosolic
377 377	LG:027320.7:2001JUN22	. 1		forward 3	TM	Cytosolic
377 377	LG:027320.7:2001JUN22	•		forward 3	TM	Transmembrane
377	LG:027320.7:2001JUN22	218		forward 3	TM	Non-Cytosolic
377	LG:027320.7:2001JUN22	249		forward 3	TM	Transmembrane
377 377	LG:027320.7:2001JUN22	265		forward 3	TM	Cytosolic
377	LG:027320.7:2001JUN22	277		forward 3	TM	Transmembrane
377 377	LG:027320.7:2001JUN22	300		forward 3	TM	
377 377	LG:027320.7:2001JUN22	319		forward 3	TM	Non-Cytosolic Transmembrane
377 377	LG:027320.7:2001JUN22	342		forward 3	TM	Cytosolic
377 377	LG:027320.7:2001JUN22	362		forward 3	TM	Transmembrane
377 377	LG:027320.7:2001JUN22	385		forward 3	TM	
377 377	LG:027320.7:2001JUN22	388		forward 3	TM	Non-Cytosolic Transmembrane
377 377	LG:027320.7:2001JUN22	411		forward 3	TM	
377 378	LG:077967.9:2001JUN22	411		forward 1		Cytosolic
378	LG:077967.9:2001JUN22	•		forward 1	TM	Non-Cytosolic
378	LG:077967.9:2001JUN22				TM	Transmembrane
378 378	LG:077967.9:2001JUN22			forward 1	TM	Cytosolic
] 750		forward 2	TM	Non-Cytosolic
378 379	LG:077967.9:2001JUN22	758		forward 2	TM	Transmembrane
378 370	LG:077967.9:2001JUN22	781		forward 2	TM	Cytosolic
379 370	LG:128475.9:2001JUN22] 214		forward 2	TM	Non-Cytosolic
379	LG:128475.9:2001JUN22	316		forward 2	TM	Transmembrane
379	LG:128475.9:2001JUN22	339		forward 2	TM	Cytosolic
379	LG:128475.9:2001JUN22	392	414	forward 2	TM	Transmembrane

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
379	LG:128475.9:2001JUN22	415	474 forward 2	TM	Non-Cytosolic
379	LG:128475.9:2001JUN22	475	497 forward 2	TM	Transmembrane
379	LG: 128475.9:2001JUN22	498	508 forward 2	· TM	Cytosolic
379	LG:128475.9:2001JUN22	509	531 forward 2	TM	Transmembrane
379	LG:128475.9:2001JUN22	532	777 forward 2	TM	Non-Cytosolic
379	LG:128475.9:2001JUN22	778	800 forward 2	TM	Transmembrane
379	LG:128475.9:2001JUN22	801	812 forward 2	TM	Cytosolic
379	LG:128475.9:2001JUN22	813	830 forward 2	TM	Transmembrane
379	LG:128475.9:2001JUN22	831	1065 forward 2	TM	Non-Cytosolic
379	LG:128475.9:2001JUN22	1	495 forward 3	TM	Non-Cytosolic
379	LG:128475.9:2001JUN22	496	518 forward 3	TM	Transmembrane
379	LG:128475.9:2001JUN22	519	524 forward 3	TM	Cytosolic
379	LG:128475.9:2001JUN22	525	547 forward 3	TM	Transmembrane
379	LG:128475.9:2001JUN22	548	1064 forward 3	TM	Non-Cytosolic
380	LG:1398104.15:2001JUN22	1	744 forward 2	TM	Non-Cytosolic
380	LG:1398104.15:2001JUN22	745	767 forward 2	TM	Transmembrane
380	LG:1398104.15:2001JUN22	768	794 forward 2	TM	Cytosolic
380	LG:1398104.15:2001JUN22	1	746 forward 3	TM	Non-Cytosolic
380	LG:1398104.15:2001JUN22	747	769 forward 3	TM	Transmembrane
380	LG:1398104.15:2001JUN22	770	794 forward 3	TM	Cytosolic
381	LG:1454018.10:2001JUN22	1	1296 forward 1	TM .	Non-Cytosolic
381	LG:1454018.10:2001JUN22	•		TM	Transmembrane
381	LG:1454018.10:2001JUN22		1331 forward 1	TM	Cytosolic
381	LG:1454018.10:2001JUN22		1351 forward 1	TM	Transmembrane
381	LG:1454018.10:2001JUN22		1472 forward 1	TM	Non-Cytosolic
381	LG:1454018.10:2001JUN22		1288 forward 2	TM	Non-Cytosolic
381	LG:1454018.10:2001JUN22		1311 forward 2	TM	Transmembrane
381	LG:1454018.10:2001JUN22		1331 forward 2	TM	Cytosolic
381	LG:1454018.10:2001JUN22		1354 forward 2	TM	Transmembrane
381	LG:1454018.10:2001JUN22		1472 forward 2	TM	Non-Cytosolic
382	LG:221548.14:2001JUN22	1	608 forward 1	TM	Non-Cytosolic
	LG:221548.14:2001JUN22	609	631 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22	632	650 forward 1	TM	Cytosolic
382	LG:221548.14:2001JUN22	651	670 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22	671	2297 forward 1	TM	Non-Cytosolic
382	LG:221548.14:2001JUN22		2320 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22		2381 forward 1	TM	Cytosolic
382	LG:221548.14:2001JUN22		2404 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22		2413 forward 1	TM	Non-Cytosolic
382	LG:221548.14:2001JUN22		2436 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22		2498 forward 1	TM	Cytosolic
382	LG:221548.14:2001JUN22		2518 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22		2689 forward 1	TM	Non-Cytosolic
382	LG:221548.14:2001JUN22		2712 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22		2865 forward 1	TM	Cytosolic
382	LG:221548.14:2001JUN22		2888 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22		2990 forward 1	TM	Non-Cytosolic
382 382	LG:221548.14:2001JUN22		3013 forward 1	TM	Transmembrane
382	LG:221548.14:2001JUN22			TM	
			3076 forward 1	TM	Cytosolic
382	LG:221548.14:2001JUN22	1	1672 forward 3	IIVI	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Fran	ne Domair	1 Topology
382	LG:221548.14:2001JUN22	1673	1695 forwar	rd 3 TM	Transmembrane
382	LG:221548.14:2001JUN22	1696	1715 forwar	rd3 TM	Cytosolic
382	LG:221548.14:2001JUN22	1716	1735 forwar	rd3 TM	Transmembrane
382	LG:221548.14:2001JUN22	1736	2124 forwar	rd3 TM	Non-Cytosolic
382	LG:221548.14:2001JUN22	2125	2147 forwar	rd3 TM	Transmembrane
382	LG:221548.14:2001JUN22	2148	2299 forwai	rd 3 TM	Cytosolic
382	LG:221548.14:2001JUN22	2300	2322 forwar	rd3 TM	Transmembrane
382	LG:221548.14:2001JUN22	2323	3075 forwar	rd 3 TM	Non-Cytosolic
383	LG:227500.5:2001JUN22	1	855 forwar	dl TM	Non-Cytosolic
383	LG:227500.5:2001JUN22	856	875 forwar	dl TM	Transmembrane
383	LG:227500.5:2001JUN22	876	1071 forwar	d1 TM	Cytosolic
383	LG:227500.5:2001JUN22	1072	1094 forwar	d1 TM	Transmembrane
383	LG:227500.5:2001JUN22	1095	1120 forwar	d1 TM	Non-Cytosolic
383	LG:227500.5:2001JUN22	1121	1138 forwar	d1 TM	Transmembrane
383	LG:227500.5:2001JUN22	1139	1218 forwar	dl TM	Cytosolic
383	LG:227500.5:2001JUN22	1219	1238 forwar	d1 TM	Transmembrane
383	LG:227500.5:2001JUN22	1239	1241 forwar	d1 TM	Non-Cytosolic
384	LG:228273.22:2001JUN22	1	1379 forwar	dl TM	Non-Cytosolic
384	LG:228273.22:2001JUN22	1380	1402 forwar		Transmembrane
384	LG:228273.22:2001JUN22	1403	1539 forwar		Cytosolic
384	LG:228273.22:2001JUN22	1	45 forwar		Cytosolic
384	LG:228273.22:2001JUN22	46	68 forwar		Transmembrane
384	LG:228273.22:2001JUN22	69	659 forwar		Non-Cytosolic
384	LG:228273.22:2001JUN22	660	682 forwar		Transmembrane
384	LG:228273.22:2001JUN22	683	694 forwar		Cytosolic
384	LG:228273.22:2001JUN22	695	717 forwar		Transmembrane
384	LG:228273.22:2001JUN22	. 718	1539 forwar	= =	Non-Cytosolic
385	LG:235432.1:2001JUN22	1	610 forwar		Non-Cytosolic
385	LG:235432.1:2001JUN22	611	633 forwar		Transmembrane
385	LG:235432.1:2001JUN22	634	780 forwar		Cytosolic
385	LG:235432.1:2001JUN22	1	610 forwar		Non-Cytosolic
385	LG:235432.1:2001JUN22	611	633 forwar		Transmembrane
385	LG:235432.1:2001JUN22	634	779 forwar		Cytosolic
386	LG:236904.20:2001JUN22	1	1425 forwar	· ·	Non-Cytosolic
386	LG:236904.20:2001JUN22		1443 forwar		Transmembrane
386	LG:236904.20:2001JUN22		1463 forwar		Cytosolic
386 386	LG:236904.20:2001JUN22 LG:236904.20:2001JUN22		1486 forwar		Transmembrane
386	LG:236904.20:2001JUN22		1520 forwar 1543 forwar		Non-Cytosolic
386	LG:236904.20:2001JUN22		1545 forwar		Transmembrane
387	LG:253193.21:2001JUN22	1044	6 forwar		Cytosolic
387	LG:253193.21:2001JUN22	7	29 forwar		Cytosolic Transmembrane
387	LG:253193.21:2001JUN22	30	920 forwar		
387	LG:253193.21:2001JUN22	30 1	159 forwar		Non-Cytosolic Non-Cytosolic
. 387	LG:253193.21:2001JUN22	160	182 forwar		Transmembrane
387	LG:253193.21:2001JUN22	183	259 forwar		Cytosolic
387	LG:253193.21:2001JUN22	260	282 forwar		Transmembrane
387	LG:253193.21:2001JUN22	283	920 forwar		Non-Cytosolic
388	LG:332161.3:2001JUN22	200]	631 forwar		Non-Cytosolic
388	LG:332161.3:2001JUN22	632	654 forwar		Transmembrane
500	LU.002 101.0.200 1301122	UJZ	JUM IUIWUI	G 2 11V1	II GI I BI I I DI GI I B

SEQ ID NO:	Template ID	Start	Stop	Frame	Domain	Topology
388	LG:332161.3:2001JUN22	655	674	forward 2	TM	Cytosolic
388	LG:332161.3:2001JUN22	675	697	forward 2	TM	Transmembrane
388	LG:332161.3:2001JUN22	698	1121	forward 2	TM	Non-Cytosolic
388	LG:332161.3:2001JUN22	1	628	forward 3	TM	Non-Cytosolic
388	LG:332161.3:2001JUN22	629	651	forward 3	TM	Transmembrane
388	LG:332161.3:2001JUN22	652	679	forward 3	TM	Cytosolic
388	LG:332161.3:2001JUN22	680	702	forward 3	TM	Transmembrane
388	LG:332161.3:2001JUN22	703		forward 3	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22	1		forward 1	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22	1514		forward 1	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 1	TM	Cytosolic
389	LG:332923.5:2001JUN22			forward 1	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 1	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22			forward 1	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 1	TM	Cytosolic
389	LG:332923.5:2001JUN22			forward 1	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 1	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22			forward 1	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 1	TM	Cytosolic
389	LG:332923.5:2001JUN22	2009		forward 2	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22	•		forward 2	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 2	· TM	
	LG:332923.5:2001JUN22			forward 2	TM	Cytosolic
389						Transmembrane
389	LG:332923.5:2001JUN22			forward 2.	.TM	Non-Cytosolic
389	LG:332923.5:2001JUN22			forward 2	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 2 ⁻ :	· TM	Cytosolic
389	LG:332923.5:2001JUN22			forward.2	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 2	TM ·	Non-Cytosolic
389	LG:332923.5:2001JUN22	700		forward 3	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22	792		forward:3	TM	Transmembrane
389	LG:332923.5:2001JUN22	815		forward 3	TM	Cytosolic
389	LG:332923.5:2001JUN22	835		forward 3	TM	Transmembrane
389	LG:332923.5:2001JUN22	854		forward 3	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22			forward 3	TM	Transmembrane
389	LG:332923.5:2001JUN22		-	forward 3	TM	Cytosolic
389	LG:332923.5:2001JUN22			forward 3	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 3	TM	Non-Cytosolic
389	LG:332923.5:2001JUN22			forward 3	TM	Transmembrane
389	LG:332923.5:2001JUN22			forward 3	TM	Cytosolic
389	LG:332923.5:2001JUN22			forward 3	TM	Transmembrane
389	LG:332923.5:2001JUN22	_		forward 3	TM	Non-Cytosolic
390	LG:343500.27:2001JUN22	1		forward 2	TM	Cytosolic
390	LG:343500.27:2001JUN22	43		forward 2	TM	Transmembrane
390	LG:343500.27:2001JUN22	66		forward 2	TM	Non-Cytosolic
391	LG:369703.9:2001JUN22	1		forward 1	TM	Non-Cytosolic
391	LG:369703.9:2001JUN22			forward 1	TM	Transmembrane
391	LG:369703.9:2001JUN22	1157		forward 1	TM	Cytosolic
391	LG:369703.9:2001JUN22	1	224	forward 2	TM	Cytosolic
391	LG:369703.9:2001JUN22	225	247	forward 2	TM	Transmembrane
391	LG:369703.9:2001JUN22	248	1156	forward 2	TM	Non-Cytosolic

SEQ ID NO:	Template ID	Start	Stop Frame	Domain	Topology
392	LG:415378.3:2001JUN22	1	1251 forward 3	TM	Non-Cytosolic
392	LG:415378.3:2001JUN22	1252	1274 forward 3	TM	Transmembrane
392	LG:415378.3:2001JUN22		1355 forward 3	TM	Cytosolic
392	LG:415378.3:2001JUN22		1378 forward 3	TM	Transmembrane
392	LG:415378.3:2001JUN22		1417 forward 3	TM	Non-Cytosolic
392	LG:415378.3:2001JUN22		1440 forward 3	TM	Transmembrane
392	LG:415378.3:2001JUN22		1491 forward 3	TM	Cytosolic
392	LG:415378.3:2001JUN22		1514 forward 3	TM	Transmembrane
392	LG:415378.3:2001JUN22		1851 forward 3	TM	Non-Cytosolic
393	LG:458583.1:2001JUN22	1	108 forward 2	TM	Cytosolic
393	LG:458583.1:2001JUN22	109	131 forward 2	TM	Transmembrane
393	LG:458583.1:2001JUN22	132	323 forward 2	TM	Non-Cytosolic
394	LG:7690373.1:2001JUN22	1	95 forward 2	TM	Cytosolic
394	LG:7690373.1:2001JUN22	96	118 forward 2	TM	Transmembrane
394	LG:7690373.1:2001JUN22	119	219 forward 2	TM	Non-Cytosolic
395	LG:898324.13:2001JUN22	1	225 forward 1	TM	Non-Cytosolic
395	LG:898324.13:2001JUN22	226	248 forward 1	TM	Transmembrane
395	LG:898324.13:2001JUN22	249	276 forward 1	TM	Cytosolic
395	LG:898324.13:2001JUN22	1	189 forward 2	TM	Non-Cytosolic
395	LG:898324.13:2001JUN22	190	212 forward 2	TM	Transmembrane
395	LG:898324.13:2001JUN22	213	224 forward 2	TM	Cytosolic
395 .	LG:898324.13:2001JUN22	225	247 forward 2	. TM	Transmembrane
395 .	LG:898324.13:2001JUN22	248	276 forward 2	ΤMi	Non-Cytosolic
396	LG:979167.5:2001JUN22	1.	252 forward 1	TM	Non-Cytosolic
396	LG:979167.5:2001JUN22	253	272 forward 1	TM	Transmembrane
396	LG:979167.5:2001JUN22	273	344 forward 1	TM	Cytosolic
396	LG:979167.5:2001JUN22	345	362 forward 1	TM	Transmembrane
396	LG:979167.5:2001JUN22	363	366 forward 1	TM	Non-Cytosolic
396	LG:979167.5:2001JUN22	367	386 forward 1	TM	Transmembrane
396	LG:979167.5:2001JUN22	387	627 forward 1	TM	Cytosolic
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396	LG:979167.5:2001JUN22	648	661 forward 1	TM	Non-Cytosolic
396	LG:979167.5:2001JUN22	662	684 forward 1	TM	Transmembrane
396	LG:979167.5:2001JUN22	685	708 forward 1	TM	Cytosolic
396	LG:979167.5:2001JUN22	709	731 forward 1	TM	Transmembrane
396	LG:979167.5:2001JUN22	732	1174 forward 1	TM	Non-Cytosolic
396	LG:979167.5:2001JUN22		1194 forward 1	TM	Transmembrane
396	LG:979167.5:2001JUN22	1195	1210 forward 1	TM	Cytosolic
396	LG:979167.5:2001JUN22	1	623 forward 3	TM	Non-Cytosolic
396	LG:979167.5:2001JUN22	624	646 forward 3	TM	Transmembrane
396	LG:979167.5:2001JUN22	647	652 forward 3	TM	Cytosolic
396	LG:979167.5:2001JUN22	653	675 forward 3	TM	Transmembrane
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395/LG:898324.13:2001JUN22 | 403-830; 405-830; 415-828; 596-828; 467-827;
316-797; 258-678; 364-665; 284-611; 1-626; 62-376
396/LG:979167.5:2001JUN22 || 1-505; 165-239; 237-908; 311-878; 369-952;
687-1191; 725-941; 895-1386; 911-1175; 918-1516; 929-1570; 934-1384; 991-
1214; 1012-1230; 1022-1286; 1067-1690; 1073-1441; 1073-1318; 1097-1416;
1097-1323; 1179-1649; 1313-1538; 1356-1788; 1345-1546; 1361-1914; 1394-
1578; 1394-1681; 1427-2144; 1427-2128; 1482-1874; 1488-1597; 1491-1864;
1492-1754; 1491-1897; 1491-1639; 1502-1765; 1524-1697; 1524-1753; 1526-
1597; 1531-2110; 1560-1795; 1560-2092; 1580-2126; 1619-1961; 1588-1698;
1593-1657; 1628-1789; 1596-1666; 1610-2008; 1648-1863; 1648-1908; 1684-
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2086; 1688-1980; 1690-2083; 1705-1960; 1735-2084; 1762-2034; 1762-1996; 1762-2250; 1788-2089; 1798-2080; 1791-2512; 1792-2047; 1831-2212; 1855-2069; 1839-2074; 1903-2211; 1925-2213; 1925-2134; 1951-2082; 1957-2139; 1993-2194; 2010-2259; 2059-2208; 2069-2212; 2083-2411; 2148-2204; 2409-2461; 2409-2910; 2426-2515; 2425-2478; 2425-2489; 2756-2995; 2771-3004; 2771-2972; 2771-3286; 2771-3259; 2775-3193; 2782-3260; 2796-3183; 2795-3040; 2812-2967; 2814-3156; 2816-2991; 2816-2940; 2816-2974; 2817-2965; 2817-3051; 2873-3091; 2894-3129; 2899-3482; 2902-3413; 2902-3076; 2910-3481; 2927-3201; 2940-3188; 2943-3457; 2965-3426; 2970-3427; 2992-3547; 2995-3172; 2995-3444; 2995-3173; 3025-3630; 3069-3512; 3094-3541; 3101-3549; 3109-3356; 3109-3570; 3112-3587; 3115-3591; 3119-3553; 3120-3589; 3121-3587; 3127-3586; 3148-3590; 3145-3582; 3151-3590; 3157-3586; 3161-3574; 3162-3582; 3173-3587; 3195-3448; 3205-3586; 3216-3586; 3223-3374; 3237-3541; 3240-3586; 3245-3589; 3252-3547; 3268-3582; 3271-3586; 3299-3593; 3364-3588; 3373-3535; 3391-3581; 3410-3556; 3419-3582; 3430-3574; 3447-3589; 3480-3574; 3480-3586; 3483-3543; 3499-3586

		TABLE 6
SEQ ID NO:	Template ID	Tissue Distribution
1	LG:036272.1:2001MAR30	Germ Cells - 20%, Urinary Tract - 17%
2	LG:093337.3:2001MAR30	Cardiovascular System - 47%, Endocrine System
		- 27%, Hemic and Immune System - 20%
3	LG:1049927.6:2001MAR30	Female Genitalia - 30%, Connective Tissue -
	,	30%, Respiratory System - 22%
4	LG:1051891.34:2001MAR30	Nervous System - 35%, Endocrine System - 24%,
·		Digestive System - 12%, Male Genitalia - 12%,
		Female Genitalia - 12%
5	LG:1089626.1:2001MAR30	Skin - 14%, Male Genitalia - 13%, Respiratory
O	20.1007020.1.2001141/2100	System - 12%
6	LG:1101416.6:2001MAR30	Skin - 11%
7	LG:1295974.1:2001MAR30	
,	LG. 1290974. 1.200 NVIAROU	Pancreas - 62%, Digestive System - 14%, Female Genitalia - 12%
0	1.C.1400E70 0:0001848 D20	
8	LG:1400572.2:2001MAR30	Female Genitalia - 100%
9	LG:1446621.1:2001MAR30	Endocrine System - 65%, Urinary Tract - 15%,
10	1.0.1400750 1.0001144.000	Female Genitalia - 10%, Nervous System - 10%
10	LG:1499752.1:2001MAR30	Liver - 33%, Cardiovascular System - 26%,
• •	10.15000447.0001144.000	Digestive System - 15%, Male Genitalia - 15%
11	LG:1503044.7:2001MAR30	Nervous System - 43%, Male Genitalia - 29%,
		Digestive System - 29%
12	LG:1503588.1:2001MAR30	Endocrine System - 100%
13	LG:1503589.2:2001MAR30	Exocrine Glands - 42%, Nervous System - 21%,
• •		Hemic and Immune System - 16%
14	LG:1506339.4:2001MAR30	Connective Tissue - 54%, Hemic and Immune
		System - 46%
15	LG:220648.6:2001MAR30	Nervous System - 33%, Exocrine Glands - 27%,
- 4		Cardiovascular System - 27%
16	LG:236654.1:2001MAR30	Unclassified/Mixed - 33%, Respiratory System -
		17%, Digestive System - 10%
17	LG:237699.26:2001MAR30	Connective Tissue - 21%, Female Genitalia -
10	10 011541 1/ 0001144 500	13%, Cardiovascular System - 13%
18	LG:311541.16:2001MAR30	Germ Cells - 30%, Urinary Tract - 17%, Liver - 12%
		00 11. 730(1) 110 110
	LG:335923.7:2001MAR30	Germ Cells - 71%, Unclassified/Mixed - 25%
20	LG:350342.14:2001MAR30	Sense Organs - 37%, Nervous System - 14%,
		Stomatognathic System - 13%
21	LG:369301.32:2001MAR30	Connective Tissue - 16%, Unclassified/Mixed -
		13%
	LG:452089.1:2001MAR30	Nervous System - 100%
23	LG:454087.3:2001MAR30	Hemic and Immune System - 24%, Connective
		Tissue - 24%, Cardiovascular System - 14%,
_		Endocrine System - 14%
	LG:466302.1:2001MAR30	Liver - 75%, Respiratory System - 17%
25		Endocrine System - 15%, Urinary Tract - 14%,
		Germ Cells - 13%
26	LG:995613.10:2001MAR30	Liver - 26%, Urinary Tract - 20%, Respiratory
		System - 14%
27	LG:011843.5:2001MAR30	Embryonic Structures - 32%, Endocrine System -
		32%, Nervous System - 14%
28	LG:075904.32:2001MAR30	Urinary Tract - 29%, Respiratory System - 14%,
		Nervous System - 13%

		TABLE 6
SEQ ID NO:	Template ID	Tissue Distribution
29	LG:1004781.3:2001MAR30	Urinary Tract - 38%, Nervous System - 38%,
		Respiratory System - 25%
30	LG:1041807.8:2001MAR30	Nervous System - 18%, Liver - 17%, Sense Organs
		- 14%
31	LG:1044448.2:2001MAR30	Unclassified/Mixed - 17%, Urinary Tract - 11%,
01	20.10-1-0.2.2001147/4/00	Germ Cells - 10%
32	LG:1080598.9:2001MAR30	
33		Embryonic Structures - 22%, Liver - 11%
	LG:1081017.1:2001MAR30	Respiratory System - 15%, Pancreas - 13%
34	LG:1083120.2:2001MAR30	Endocrine System - 67%, Female Genitalia - 33%
35	LG:1097492.12:2001MAR30	
36	LG:118834.9:2001MAR30	Embryonic Structures - 26%, Germ Cells - 21%,
		Endocrine System - 12%, Unclassified/Mixed -
		12%
37	LG:1227408.25:2001MAR30	Nervous System - 41%, Pancreas - 15%,
		Respiratory System - 11%, Connective Tissue -
		11%, Male Genitalia - 11%
38	LG:1326953.1:2001MAR30	Male Genitalia - 47%, Exocrine Glands - 27%,
		Urinary Tract - 20%
39	LG:1397821.17:2001MAR30	Female Genitalia - 11%
40	LG:1512507.1:2001MAR30	Liver - 100%
41	LG:196583.5:2001MAR30	Connective Tissue - 46%, Cardiovascular System
		- 12%
42	LG:198669.1:2001MAR30	Sense Organs - 12%, Nervous System - 11%,
		Pancreas - 11%
43	LG:202943.1:2001MAR30	Embryonic Structures - 57%, Musculoskeletal
,,,		System - 11%
44	LG:204724.3:2001MAR30	Urinary Tract - 100%
	LG:206425.10:2001MAR30	Sense Organs - 30%, Pancreas - 14%, Skin - 11%
-10	20.200-20.101200117# (100	001100 Organia 0070, 1 ancicas - 1470, 34111- 1170
46	LG:208190.2:2001MAR30	Germ Cells - 31%, Exocrine Glands - 17%, Urinary
	20.200170.2.2007777 4100	Tract - 14%
47	LG:222927.2:2001MAR30	Liver - 14%, Musculoskeletal System - 11%
	LG:228046.5:2001MAR30	Stomatognathic System - 21%
	LG:230980.1:2001MAR30	Liver - 38%, Digestive System - 33%,
47	LG.250700.1.20011VIAR50	
50	LG:236976.2:2001MAR30	Unclassified/Mixed - 15%
		Germ Cells - 77%, Unclassified/Mixed - 13%
31	LG:238322.6:2001MAR30	Musculoskeletal System - 25%, Sense Organs -
. 50	10-041443 3-00033 44 500	14%
52	LG:341461.1:2001MAR30	Germ Cells - 39%, Male Genitalia - 26%,
		Exocrine Glands - 14%
53	LG:354088.1:2001MAR30	Respiratory System - 23%, Liver - 21%, Digestive
		System - 19%
54	LG:376275.1:2001MAR30	Exocrine Glands - 67%, Hemic and Immune
		System - 17%, Nervous System - 17%
55	LG:399281.3:2001MAR30	Endocrine System - 27%, Female Genitalia -
		19%, Hemic and Immune System - 13%,
		Digestive System - 13%
56	LG:404921.10:2001MAR30	Endocrine System - 11%
57	LG:444677.34:2001MAR30	Nervous System - 35%, Male Genitalia - 28%,
		Cardiovascular System - 18%
58	LG:968691.1:2001MAR30	Hemic and Immune System - 100%
		Tierrie dire in invente equipment 1000

SEQ ID NO:	Template iD ·	Tissue Distribution
59	LG:983862.1:2001MAR30	Unclassified/Mixed - 15%, Liver - 15%, Nervous
	29.700002.1.20011VIAR00	System - 12%
60	LG:984130.1:2001MAR30	Embryonic Structures - 30%, Unclassified/Mixed -
00	20.704100.1.2001141/1100	10%, Male Genitalia - 10%
61	LG:986291.1;2001MAR30	Hemic and Immune System - 100%
62	LG:045210.8:2001MAR30	Germ Cells - 41%, Skin - 31%, Unclassified/Mixed -
		10%
63	LG:229284.39:2001MAR30	Embryonic Structures - 11%, Connective Tissue - 10%, Nervous System - 10%
64	LG:337810.20:2001MAR30	Skin - 38%, Germ Cells - 18%
65	LG:463420.1:2001MAR30	Nervous System - 19%, Skin - 11%
66	LG:1080918.1:2001MAR30	Connective Tissue - 38%, Respiratory System -
		14%, Exocrine Glands - 11%, Endocrine System - 11%
67	LG:1093747.15:2001MAR30	Germ Cells - 22%, Embryonic Structures - 14%, Urinary Tract - 11%
68	LG:1096896.47:2001MAR30	Embryonic Structures - 40%, Urinary Tract - 15%, Unclassified/Mixed - 15%
69	LG:1098931.39:2001MAR30	Exocrine Glands - 14%, Germ Cells - 14%,
		Cardiovascular System - 11%
70	LG:1100823.1:2001MAR30	Liver - 53%, Female Genitalia - 41%
71	LG:1166387.1:2001MAR30	Connective Tissue - 11%, Unclassified/Mixed - 11%
72	LG:1383036.49:2001MAR30	widely distributed
73	LG:1452353.14:2001MAR30	Sense Organs - 25%, Unclassified/Mixed - 11%
74	LG:1452435.15:2001MAR30	Liver - 43%, Musculoskeletal System - 13%
75	LG:1498774.1:2001MAR30	Musculoskeletal System - 75%, Nervous System - 25%
76	LG:197180.1:2001MAR30	Pancreas - 11%, Female Genitalia - 10%
77	LG:199489.1:2001MAR30	Musculoskeletal System - 26%,
	•	Unclassified/Mixed - 17%, Germ Cells - 11%
78	LG:201908.3:2001MAR30	Germ Cells - 41%, Unclassified/Mixed - 18%
79	LG:247245.26:2001MAR30	Germ Cells - 28%, Exocrine Glands - 22%
80	LG:256365.2:2001MAR30	Male Genitalia - 31%, Urinary Tract - 12%,
÷		Cardiovascular System - 12%, Respiratory System - 12%
81	LG:332923.4:2001MAR30	Nervous System - 23%, Sense Organs - 22%, Germ Cells - 12%
82	LG:335276.1:2001MAR30	Nervous System - 30%, Exocrine Glands - 16%, Urinary Tract - 14%, Connective Tissue - 14%
83	LG:350272.2:2001MAR30	Musculoskeletal System - 18%
	LG:350921.2:2001MAR30	Liver - 18%, Embryonic Structures - 18%,
		Digestive System - 16%
85 °	LG:406568.1:2001MAR30	Stomatognathic System - 49%, Musculoskeletal System - 23%, Cardiovascular System - 21%
86	LG:411043.3:2001MAR30	Pancreas - 18%, Urinary Tract - 14%, Nervous System - 11%, Cardiovascular System - 11%
87	LG:414376.20:2001MAR30	Nervous System - 42%, Pancreas - 15%, Exocrine Glands - 13%
88	LG:457695.1:2001MAR30	Nervous System - 100%
	LG:902390.2:2001MAR30	Nervous System - 100%

SEQ ID NO:	Tomolato ID	Ties to Dietribution
90	Template ID LG:903565.20:2001MAR30	Tissue Distribution
70	L9.905565.20.2001MAR50	Urinary Tract - 18%, Hemic and Immune System - 15%, Liver - 12%, Nervous System - 12%
91	LG:978182.4:2001MAR30	Unclassified/Mixed - 17%, Germ Cells - 12%, Skin -
	20.77 0 102.4.200 1177 1100	12%
92	LG:986827.1;2001MAR30	Male Genitalia - 87%, Digestive System - 13%
93	LG:013792.1:2001MAR30	Germ Cells - 86%
94	LG:018258.1:2001MAR30	Digestive System - 33%, Endocrine System - 33%,
		Urinary Tract - 25%
95	LG:023126.3:2001MAR30	Hemic and Immune System - 92%
96	LG:023618.1:2001MAR30	Nervous System - 41%, Connective Tissue - 10%
97	LG:030999.1:2001MAR30	Sense Organs - 36%, Embryonic Structures - 18%
98	LG:103508.1:2001MAR30	Embryonic Structures - 46%, Unclassified/Mixed - 21%
99	LG:107976.15:2001MAR30	Nervous System - 13%, Sense Organs - 12%
100	LG:1080096.1:2001MAR30	Sense Organs - 29%, Stomatognathic System -
100	LG. 1000090. 1.200 11VIAR30	26%
101	LG:1080275.1:2001MAR30	Musculoskeletal System - 32%, Cardiovascular System - 29%, Endocrine System - 11%
102	LG:1090358.10:2001MAR30	· · · · · · · · · · · · · · · · · · ·
100	10 1005000 0 00011 14 000	Pancreas - 13%, Male Genitalia - 13%
103	LG:1095833.9:2001MAR30	Unclassified/Mixed - 19%, Embryonic Structures - 15%, Skin - 13%
104	LG:1383121.25:2001MAR30	Nervous System - 15%, Liver - 13%
105	LG:1386609.2:2001MAR30	Liver - 11%, Skin - 10%
106	LG:1398465.1:2001MAR30	Sense Organs - 19%, Embryonic Structures - 10%, Cardiovascular System - 10%
107	LG:1453417.10:2001MAR30	Nervous System - 26%, Skin - 18%
108	LG:147869.3:2001MAR30	Endocrine System - 69%, Nervous System - 31%
109	LG:148485.5:2001MAR30	Exocrine Glands - 48%, Urinary Tract - 28%,
		Female Genitalia - 16%
110	LG:1501818.12:2001MAR30	Sense Organs - 15%
111	LG:1508275.1:2001MAR30	Liver - 100%
112	LG:1509771.1:2001MAR30	Respiratory System - 100%
113	LG:1512998.13:2001MAR30	Sense Organs - 20%
114	LG:198251.7:2001MAR30	Nervous System - 13%, Embryonic Structures -
115	LG:198296.1:2001MAR30	11%, Sense Organs - 10%
113	LG. 198290. 1.200 HVIARSU	Unclassified/Mixed - 11%, Cardiovascular System - 11%
116	LG:198876.13:2001MAR30	Sense Organs - 11%
	LG:200704.1:2001MAR30	Liver - 36%, Female Genitalia - 28%, Endocrine
117	20.200703.1.200114774100	System - 16%, Nervous System - 16%
118	LG:206593.3:2001MAR30	Exocrine Glands - 28%, Unclassified/Mixed -
		24%, Endocrine System - 14%, Nervous System -
		14%
119	LG:223970.11:2001MAR30	Skin - 11%
120	LG:227500.5:2001MAR30	Connective Tissue - 17%, Embryonic Structures -
		17%, Cardiovascular System - 11%
121	LG:227722.7:2001MAR30	Pancreas - 39%, Urinary Tract - 30%, Male
		Genitalia - 17%
122	LG:229105.1:2001MAR30	Nervous System - 36%, Digestive System - 23%

SEQ ID NO:	Template ID	Tissue Distribution
123	LG:233761.4:2001MAR30	widely distributed
124	LG:234326.67:2001MAR30	Nervous System - 12%, Sense Organs - 10%
125	LG:236056.27:2001MAR30	Skin - 23%
126	LG:253889.31:2001MAR30	Germ Cells - 12%, Female Genitalia - 10%
127	LG:270833.135:2001MAR30	•
128	LG:292613.7:2001MAR30	Unclassified/Mixed - 19%
129	LG:331546.2:2001MAR30	Stomatognathic System - 11%
130	LG:332027.6:2001MAR30	Digestive System - 13%, Nervous System - 12%, Male Genitalia - 10%
131	LG:336998.1:2001MAR30	Hemic and Immune System - 12%, Unclassified/Mixed - 11%
132	LG:338010.8:2001MAR30	Exocrine Glands - 33%, Cardiovascular System - 14%, Connective Tissue - 14%
133	LG:344597.1:2001MAR30	Nervous System - 35%, Germ Cells - 33%, Respiratory System - 11%
134	LG:347361.2:2001MAR30	Germ Cells - 10%
135	LG:349293.17:2001MAR30	Germ Cells - 14%, Hemic and Immune System - 13%, Unclassified/Mixed - 13%
136	LG:410595.19:2001MAR30	Sense Organs - 23%, Germ Cells - 12%
137	LG:411151.35:2001MAR30	Musculoskeletal System - 32%, Cardiovascular System - 29%, Stomatognathic System - 11%
138	LG:411334.8:2001MAR30	Unclassified/Mixed - 15%, Connective Tissue - 14%, Male Genitalia - 12%
139	LG:458583.1:2001MAR30	Nervous System - 100%
140	LG:475378.1:2001MAR30	Respiratory System - 13%
141	LG:481572.1:2001MAR30	Skin - 14%
142	LG:481704.1:2001MAR30	Pancreas - 26%, Hemic and Immune System - 21%, Cardiovascular System - 21%
143	LG:898195.4:2001MAR30	Embryonic Structures - 15%
144	LG:903785.1:2001MAR30	Germ Cells - 24%, Unclassified/Mixed - 15%
145	LG:977454.3:2001MAR30	Embryonic Structures - 17%, Cardiovascular System - 13%
146	LG:977724.12:2001MAR30	Connective Tissue - 15%
147	LG:978215.19:2001MAR30	Sense Organs - 25%, Nervous System - 14%, Unclassified/Mixed - 13%
148	LG:981795.1:2001MAR30	Female Genitalia - 38%, Urinary Tract - 32%, Unclassified/Mixed - 20%
149	LG:982784.1:2001MAR30	Germ Cells - 53%
150	LG:987322.4:2001MAR30	Unclassified/Mixed - 11%, Embryonic Structures - 11%
151	LG:006242.7:2001MAR30	widely distributed
152	LG:027320.7:2001MAR30	Unclassified/Mixed - 35%, Embryonic Structures -
		24%, Cardiovascular System - 11%, Exocrine Glands - 11%
	LG:147541.44:2001MAR30	widely distributed
154		Musculoskeletal System - 43%, Hemic and Immune System - 29%, Respiratory System - 14%, Digestive System - 14%
155		widely distributed
156		Exocrine Glands - 13%

SEQ ID NO:	Template ID	Tissue Distribution
157	LI:011822.6:2001MAY17	Nervous System - 38%, Cardiovascular System -
		25%, Female Genitalia - 16%
159	LI:1169981.13:2001MAY17	. Hemic and Immune System - 20%, Embryonic
		Structures - 18%, Pancreas - 18%
160	LI:1171553.1:2001MAY17	Sense Organs - 19%
161	LI:1183156.3:2001MAY17	Musculoskeletal System - 26%, Respiratory
		System - 19%, Hemic and Immune System - 19%
162	U:1188500.6:2001MAY17	Liver - 61%, Unclassified/Mixed - 16%, Female Genitalia - 16%
163	LI:147333.12:2001MAY17	Connective Tissue - 39%, Liver - 25%, Exocrine Glands - 14%
164	U:147523.7:2001МАY17	Connective Tissue - 58%, Cardiovascular System - 33%
165	LI:197388.10:2001MAY17	Endocrine System - 17%, Skin - 14%, Connective Tissue - 13%
166	LI:2049216.1:2001MAY17	Connective Tissue - 64%, Hemic and Immune System - 27%
167	LI:2051624.2:2001MAY17	Liver - 35%, Endocrine System - 35%, Unclassified/Mixed - 19%
168	LI:2121838.1:2001MAY17	Germ Cells - 56%, Musculoskeletal System - 18%, Exocrine Glands - 13%
169	LI:2122954.8:2001MAY17	Nervous System - 100%
170	LI:2198064.2:2001MAY17	Female Genitalia - 50%, Hemic and Immune System - 50%
171	LI:2206583.1:2001MAY17	Nervous System - 100%
172	LI:235663.6:2001MAY17	Digestive System - 62%, Respiratory System - 23%, Female Genitalia - 15%
173	LI:236386.7:2001MAY17	Stomatognathic System - 23%, Skin - 13%
174	LI:236654.3:2001MAY17	Respiratory System - 23%, Exocrine Glands - 11%, Unclassified/Mixed - 11%, Male Genitalia - 11%
175	LI:256059.46:2001MAY17	Stomatognathic System - 19%
176	LI:279978.22:2001MAY17	Liver - 48%, Urinary Tract - 44%
177	Ц:311541.6:2001MAY17	Germ Cells - 35%, Urinary Tract - 31%
	Ц:346123.1:2001MAY17	Exocrine Glands - 71%, Nervous System - 29%
	Ц:381211.5:2001MAY17	Skin - 17%, Sense Organs - 11%
	LI:412197.82:2001MAY17	Exocrine Glands - 14%
181	LI:412936.49:2001MAY17	Sense Organs - 16%, Germ Cells - 11%, Pancreas - 11%
	LI:427792.139:2001MAY17	Sense Organs - 13%
	LI:450229.1:2001MAY17	Nervous System - 100%
185	LI:764701.8:2001MAY17	Hemic and Immune System - 25%, Male Genitalia - 25%, Digestive System - 13%
186	LI:024124.2:2001MAY17	Germ Cells - 62%, Nervous System - 18%, Urinary Tract - 14%
187	Ц:038252.3:2001MAY17	Embryonic Structures - 13%, Germ Cells - 12%
188	LI:056882.1:2001MAY17	Exocrine Glands - 63%, Female Genitalia - 25%, Nervous System - 13%
189	LI:059530.1:2001MAY17	Stomatognathic System - 65%, Urinary Tract - 11%

		TABLE 6
SEQ ID NO:	Template ID	Tissue Distribution
190	U:089950.30:2001MAY17	Skin - 31%, Male Genitalia - 15%, Pancreas - 10%
		•
191	LI:1072906.38:2001MAY17	Embryonic Structures - 18%
192	LI:1158936.4:2001MAY17	Musculoskeletal System - 39%, Endocrine System
		- 28%, Exocrine Glands - 28%
193	U:1173412.15:2001MAY17	Germ Cells - 31%, Pancreas - 13%
194	LI:1174279.14:2001MAY17	Embryonic Structures - 22%, Liver - 20%, Male
		Genitalia - 11%
195	U:1174809.1:2001MAY17	Hemic and Immune System - 86%, Nervous
		System - 14%
196	LI:1175131.1:2001MAY17	Germ Cells - 23%, Urinary Tract - 21%, Female
		Genitalia - 12%, Male Genitalia - 12%
197	LI:1188801.10:2001MAY17	Digestive System - 53%, Urinary Tract - 21%,
		Connective Tissue - 13%
198	LI:1189176.27:2001MAY17	Skin - 59%, Cardiovascular System - 15%
199	LI:197739.4:2001MAY17	Cardiovascular System - 25%, Hemic and
		Immune System - 17%, Endocrine System - 17%
200	LI:2049016.1:2001MAY17	Unclassified/Mixed - 42%, Embryonic Structures -
		42%
201	U:2049137.1:2001MAY17	Germ Cells - 67%, Unclassified/Mixed - 10%
202	LI:2051907.1:2001MAY17	Digestive System - 38%, Unclassified/Mixed -
		31%, Nervous System - 19%
203	U:2117996.13:2001MAY17	Digestive System - 100%
204	U:2118683.15:2001MAY17	Unclassified/Mixed - 45%, Germ Cells - 22%,
225		Digestive System - 11%
205	LI:2120312.1:2001MAY17	Embryonic Structures - 43%, Hemic and Immune
007		System - 22%, Respiratory System - 13%
207	LI:2121802.5:2001MAY17	Digestive System - 100%
	LI:216129.45:2001MAY17	Endocrine System - 14%, Skin - 12%
210 211	LI:2186630.1:2001MAY17	Endocrine System - 100%
211	LI:2188206.2:2001MAY17	Unclassified/Mixed - 26%, Connective Tissue - 18%, Male Genitalia - 18%
212	Ц:2199710.9:2001MAY17	
	L:2209335.2:2001MAY17	Sense Organs - 78% Nervous System - 86%, Male Genitalia - 14%
	L:230980.13:2001MAY17	Digestive System - 68%, Unclassified/Mixed - 23%
214	L.200700.13.2001WA117	Digestive System - 00%, Officiassified/fvlixed - 25%
215	LI:244421.37:2001MAY17	Nervous System - 15%, Musculoskeletal System -
2.0	L.2	13%, Female Genitalia - 13%, Male Genitalia -
		13%
216	Ц:341998.1:2001MAY17	Unclassified/Mixed - 33%, Hemic and Immune
2.0	2.0-177011.200110111111111111111111111111111	System - 33%, Female Genitalia - 13%, Male
		Genitalia - 13%
217	LI:347931.10:2001MAY17	Endocrine System - 14%, Digestive System - 11%,
2.,,	2.0-7,701.10.20011171717	Respiratory System - 10%
218	LI:350771.42:2001MAY17	Pancreas - 22%, Male Genitalia - 16%, Digestive
2.0	2.000771.42.2001110117	System - 11%, Embryonic Structures - 11%
219	LI:354423.6:2001MAY17	Stomatognathic System - 40%, Exocrine Glands -
		15%
220	⊔:399333.8:2001MAY17	Pancreas - 16%, Germ Cells - 11%
	LI:445084.36:2001MAY17	Germ Cells - 29%, Cardiovascular System - 23%,
		Liver - 12%
	•	

		IABLE O
SEQ ID NO:	Template ID	Tissue Distribution
222	LI:454087.3:2001MAY17	Hemic and Immune System - 41%, Connective Tissue - 32%
223	LI:474887.1:2001MAY17	Unclassified/Mixed - 20%, Sense Organs - 20%, Endocrine System - 12%
224	U:745251.1:2001МАY17	Hemic and Immune System - 62%, Unclassified/Mixed - 38%
225	U:747717.9:2001MAY17	Respiratory System - 60%, Digestive System - 40%
226	U:806211.3:2001MAY17	Nervous System - 44%, Respiratory System - 33%, Male Genitalia - 22%
227	U:815072.1:2001MAY17	Male Genitalia - 41%, Exocrine Glands - 29%, Urinary Tract - 24%
228	U:817052.8:2001МАY17	Liver - 14%, Skin - 12%, Sense Organs - 11%, Nervous System - 11%
229	Ц:903392.45:2001MAY17	Germ Cells - 33%, Nervous System - 10%
230	LI:013724.1:2001MAY17	Embryonic Structures - 42%, Sense Organs - 26%,
231	U:191726.16:2001MAY17	Skin - 14% Urinary Tract - 19%, Skin - 19%, Musculoskeletal System - 16%
232	U:202270.2:2001MAY17	Liver - 42%, Nervous System - 16%, Unclassified/Mixed - 12%
233	U:2119352.6:2001МАY17	Unclassified/Mixed - 12% Unclassified/Mixed - 17%, Female Genitalia - 15%, Embryonic Structures - 11%
234	U:2207776.11:2001MAY17	Digestive System - 20%, Connective Tissue - 14%, Male Genitalia - 12%
235	Ц:256442.1:2001MAY17	Respiratory System - 32%, Female Genitalia - 20%, Digestive System - 16%, Cardiovascular System - 16%
237	LI:018494.1:2001MAY17	Urinary Tract - 34%, Endocrine System - 33%, Respiratory System - 19%
238	U:023518.2:2001MAY17	Urinary Tract - 55%, Musculoskeletal System - 32%, Respiratory System - 14%
239	LI:053488.46:2001MAY17	Urinary Tract - 17%, Musculoskeletal System - 11%, Cardiovascular System - 10%
240	U:058298.27:2001MAY17	Exocrine Glands - 100%
241	U:1110046.1:2001МАУ17	Liver - 26%, Digestive System - 23%, Unclassified/Mixed - 19%
242	U:1166752.11:2001MAY17	Embryonic Structures - 20%, Urinary Tract - 12%
	U:1173766.1:2001MAY17	Stomatognathic System - 24%, Sense Organs - 21%
244	U:1177952.4:2001MAY17	Germ Cells - 15%, Skin - 11%, Female Genitalia - 10%
245	LI:1178064.3:2001MAY17	Germ Cells - 40%, Unclassified/Mixed - 16%, Urinary Tract - 11%
246	U:1183121.1:2001MAY17	Sense Organs - 33%, Pancreas - 23%
	LI:1190431.13:2001MAY17	Hemic and Immune System - 40%, Pancreas - 12%, Liver - 11%
248	LI:199121.14:2001MAY17	Connective Tissue - 14%, Cardiovascular System - 11%
249	Ц:202630.5:2001MAY17	Liver - 36%, Pancreas - 19%

SEQ ID NO:	Tomplete ID	Tion to Distribution
250	Template ID LI:2034488.1:2001MAY17	Tissue Distribution
250	L.2004466.1.2001MAY17	Digestive System - 29%, Female Genitalia - 25%, Connective Tissue - 25%
251	LI:2051434.8:2001MAY17	Connective Tissue - 63%, Unclassified/Mixed -
	U.2001454.6;2001WAT17	14%
252	U:2118475.9:2001MAY17	Unclassified/Mixed - 28%, Hemic and Immune System - 21%, Connective Tissue - 19%
253	U:218849.24;2001МАY17	Respiratory System - 11%, Musculoskeletal System - 11%
254	LI:2199824.5:2001MAY17	Male Genitalia - 24%, Cardiovascular System - 19%, Urinary Tract - 19%
255	LI:233018.32:2001MAY17	Embryonic Structures - 16%
256	LI:236295.8:2001MAY17	Urinary Tract - 53%, Unclassified/Mixed - 33%,
		Hemic and Immune System - 13%
257	LI:286989.14:2001MAY17	Embryonic Structures - 14%, Sense Organs - 10%
258	LI:345320.4:2001MAY17	Hemic and immune System - 30%, Liver - 18%, Germ Cells - 12%
259	Ц:355693.18:2001MAY17	Nervous System - 15%, Respiratory System - 11%
260	LI:359876.1:2001MAY17	Exocrine Glands - 100%
261	Ц:406664.32:2001MAY17	Cardiovascular System - 28%, Embryonic Structures - 11%, Liver - 11%
262	LI:410324.1:2001MAY17	Sense Organs - 41%, Endocrine System - 12%
263	LI:414376.12:2001MAY17	Nervous System - 38%, Pancreas - 14%, Exocrine Glands - 12%
264	LI:452089.1:2001MAY17	Nervous System - 100%
265	LI:481614.43:2001MAY17	Nervous System - 12%
266	LI:809605.2:2001MAY17	Sense Organs - 37%, Pancreas - 12%
267	LI:816437.25:2001MAY17	Nervous System - 96%
268	LI:817827.5:2001MAY17	Musculoskeletal System - 78%, Nervous System - 22%
269	LI:002345.15:2001MAY17	Stomatognathic System - 14%
270	LI:022629.5:2001MAY17	Germ Cells - 50%, Unclassified/Mixed - 24%
271	Ц:061031.4:2001MAY17	Connective Tissue - 30%, Pancreas - 22%, Nervous System - 22%
272	Ц:108232.2:2001MAY17	Liver - 50%, Hemic and Immune System - 16%, Endocrine System - 13%
273	U:1085493.16:2001MAY17	Skin - 18%, Pancreas - 12%, Embryonic Structures - 11%
274	LI:1085513.2:2001MAY17	Musculoskeletal System - 17%, Unclassified/Mixed - 15%, Nervous System - 12%, Cardiovascular System - 12%
275	Ц:1086797.9:2001MAY17	Embryonic Structures - 20%, Stomatognathic System - 13%, Liver - 12%
276	LI:1088446.1:2001MAY17	Embryonic Structures - 25%, Endocrine System - 23%, Nervous System - 13%
277	LI:1133764.3:2001MAY17	Germ Cells - 23%, Unclassified/Mixed - 16%, Urinary Tract - 13%
278	U:1147614.5:2001MAY17	Musculoskeletal System - 14%, Sense Organs - 13%, Connective Tissue - 13%

		IABLE 6
SEQ ID NO:	Template ID	Tissue Distribution
279	LI:1181710.1:2001MAY17	Hemic and Immune System - 33%, Male
		Genitalia - 33%, Nervous System - 33%
280	U:1183192.1:2001MAY17	Cardiovascular System - 28%, Musculoskeletal
		System - 23%, Urinary Tract - 20%
281	LI:1188786.15:2001MAY17	Embryonic Structures - 17%, Urinary Tract - 13%
282	LI:145626.1:2001MAY17	Sense Organs - 44%, Respiratory System - 16%,
		Male Genitalia - 14%
283	U:147869.3:2001MAY17	Endocrine System - 69%, Nervous System - 31%
284	LI:151747.4:2001MAY17	Male Genitalia - 10%
285	LI:198296.1:2001MAY17	Cardiovascular System - 11%
286	LI:200117.4:2001MAY17	Embryonic Structures - 13%, Unclassified/Mixed - 12%
287	LI:200704.1:2001MAY17	Female Genitalia - 37%, Endocrine System -
		26%, Nervous System - 21%
288	LI:2049995.3:2001MAY17	Germ Cells - 29%
289	LI:2052097.2:2001MAY17	Liver - 23%, Skin - 20%, Pancreas - 12%
290	LI:209351.22:2001MAY17	Exocrine Glands - 12%, Connective Tissue - 11%, Pancreas - 11%
291	U:2120481.1:2001MAY17	Female Genitalia - 21%, Musculoskeletal System - 21%, Connective Tissue - 21%
293	LI:2191585.1:2001MAY17	Liver - 100%
294	Ц:2198562.3:2001MAY17	Pancreas - 20%, Hemic and Immune System - 11%
295	LI:2209684.5:2001MAY17	Hemic and Immune System - 27%, Female Genitalia - 23%, Exocrine Glands - 23%
296	LI:222795.28:2001MAY17	widely distributed
	L:228273.25:2001MAY17	Nervous System - 16%, Embryonic Structures -
271	□.2202/3.23.200 NVIA † 1/	14%, Male Genitalia - 10%
298	LI:232386.31:2001MAY17	Unclassified/Mixed - 14%
	LI:233089.2:2001MAY17	Female Genitalia - 10%, Liver - 10%
	LI:240641.10:2001MAY17	Sense Organs - 18%, Germ Cells - 12%
	LI:243871.4:2001MAY17	Hemic and Immune System - 20%, Nervous
		System - 20%, Embryonic Structures - 19%
302	LI:245597.7:2001MAY17	Skin - 18%, Hemic and Immune System - 12%
	LI:256009.31:2001MAY17	Urinary Tract - 24%, Hemic and Immune System -
		18%, Endocrine System - 15%, Male Genitalia - 15%, Exocrine Glands - 15%
304	LI:262221.1:2001MAY17	Nervous System - 48%, Endocrine System - 15%
	LI:332957.8:2001MAY17	Stomatognathic System - 29%, Germ Cells - 18%
	LI:335352.13:2001MAY17	widely distributed
	LI:343844.7:2001MAY17	Germ Cells - 69%, Connective Tissue - 22%
	LI:344528.1:2001MAY17	Pancreas - 22%, Hemic and Immune System -
•		17%, Unclassified/Mixed - 16%
309	LI:374578.27:2001MAY17	Embryonic Structures - 20%, Sense Organs - 16%, Connective Tissue - 11%
310	LI:381993.13:2001MAY17	Germ Cells - 16%, Cardiovascular System - 15%, Unclassified/Mixed - 15%
311	LI:400373.2:2001MAY17	Exocrine Glands - 12%, Sense Organs - 12%
	LI:400963.6:2001MAY17	Embryonic Structures - 32%, Endocrine System - 15%, Female Genitalia - 11%, Digestive System -
		11%

SEQ ID NO:	Template ID	Tissue Distribution
313	LI:404874.8:2001MAY17	Germ Cells - 37%
314	LI:405158.18:2001MAY17	Germ Cells - 13%, Skin - 10%
315	LI:405889.22:2001MAY17	Pancreas - 15%, Skin - 11%
316	Ц:411151.31:2001MAY17	Cardiovascular System - 41%, Musculoskeletal System - 32%
317	LI:411313.51:2001MAY17	Nervous System - 16%, Skin - 14%
318	LI:417127.1:2001MAY17	Connective Tissue - 88%, Nervous System - 13%
319	U:429817.44:2001MAY17	Germ Cells - 23%, Female Genitalia - 16%, Pancreas - 11%
320	LI:474134.23:2001MAY17	Stomatognathic System - 16%, Liver - 14%
321	LI:475378.3:2001MAY17	Respiratory System - 11%
322	U:749588.15:2001MAY17	Skin - 18%, Unclassified/Mixed - 15%, Female Genitalia - 13%
323	U:757736.17:2001MAY17	Stomatognathic System - 11%, Musculoskeletal System - 10%
324	LI:817278.4:2001MAY17	Unclassified/Mixed - 90%
325	LI:027320.5:2001MAY17	Embryonic Structures - 32%, Unclassified/Mixed - 16%, Exocrine Glands - 16%
326	LI:204635.5:2001MAY17	Respiratory System - 37%, Embryonic Structures - 29%, Male Genitalia - 20%
327	LI:215532.38:2001MAY17	Sense Organs - 20%, Pancreas - 14%
328	LI:228319.6:2001MAY17	Musculoskeletal System - 54%, Digestive System - 15%, Hemic and Immune System - 15%, Nervous System - 15%
329	LI:236589.24:2001MAY17	Embryonic Structures - 10%
330	LI:247444.3:2001MAY17	Unclassified/Mixed - 20%, Female Genitalia - 15%, Liver - 12%, Male Genitalia - 12%
	LI:332404.20:2001MAY17	Endocrine System - 36%, Nervous System - 21%, Digestive System - 14%, Hemic and Immune System - 14%, Female Genitalia - 14%
	LG:1088459.4:2001JUN22	Female Genitalia - 100%
	LG:1501495.1:2001JUN22	Unclassified/Mixed - 28%, Nervous System - 23%, Digestive System - 13%
	LG:334284.10:2001JUN22	Unclassified/Mixed - 60%
	LG:345279.19:2001JUN22	Sense Organs - 22%, Germ Cells - 21%
	LG:7689681.1:2001JUN22	Unclassified/Mixed - 35%, Digestive System - 24%, Nervous System - 18%
	LG:7690093.1:2001JUN22	Stomatognathic System - 80%
	LG:7690175.3:2001JUN22	Cardiovascular System - 23%, Unclassified/Mixed - 20%, Respiratory System -
	LG:7697128.1:2001JUN22	Exocrine Glands - 67%, Respiratory System - 33%
340	LG:006394.20:2001JUN22	Sense Organs - 15%, Digestive System - 14%, Germ Cells - 10%
	LG:1012069.1:2001JUN22	Liver - 85%, Male Genitalia - 10%
342	LG:104533.11:2001JUN22	Pancreas - 35%, Liver - 34%, Digestive System - 13%
343	LG:1045853.23:2001JUN22	Endocrine System - 22%, Digestive System - 14%, Pancreas - 11%, Male Genitalia - 11%

CEO ID NO:	To complete ID	IABLE 0
SEQ ID NO:	Template ID	Tissue Distribution
344	LG:1081017.8:2001JUN22	Male Genitalia - 38%, Nervous System - 25%,
		Hemic and Immune System - 19%, Urinary Tract -
0.45	10.1000050 4.0003 # 10.00	19%
345	LG:1090358.6:2001JUN22	Unclassified/Mixed - 86%, Nervous System - 14%
346	LG:1135312.7:2001JUN22	Unclassified/Mixed - 33%, Male Genitalia - 28%,
		Pancreas - 23%
347	LG:1328501.2:2001JUN22	Endocrine System - 62%, Exocrine Glands - 19%
348	LG:133095.1:2001JUN22	Unclassified/Mixed - 20%
349	LG:135379.5:2001JUN22	Sense Organs - 56%
350	LG:1365581.3:2001JUN22	Embryonic Structures - 21%, Nervous System -
		16%, Male Genitalia - 11%
351	LG:1383156.20:2001JUN22	Respiratory System - 90%
352	LG:1501767.18:2001JUN22	Germ Cells - 24%
353	LG:1501890.8:2001JUN22	Hemic and Immune System - 17%, Urinary Tract -
		11%, Cardiovascular System - 11%
354	LG:203434.23:2001JUN22	Exocrine Glands - 20%, Urinary Tract - 17%,
		Embryonic Structures - 17%
355	LG:204724.5:2001JUN22	Urinary Tract - 99%
356	LG:257107.16:2001JUN22	Skin - 12%
357	LG:353530.4:2001JUN22	Embryonic Structures - 15%, Skin - 14%
358	LG:7683573.3:2001JUN22	Endocrine System - 33%, Male Genitalia - 33%,
		Respiratory System - 17%, Nervous System - 17%
359	LG:7684224.1:2001JUN22	Liver - 100%
360	LG:7690365.2:2001JUN22	Liver - 28%, Embryonic Structures - 28%,
		Cardiovascular System - 13%, Exocrine Glands -
		13%
361	LG:968691.1:2001JUN22	Hemic and Immune System - 100%
	LG:983076.7:2001JUN22	Pancreas - 19%, Germ Cells - 11%
363	LG:986291.1:2001JUN22	Hemic and Immune System - 100%
364	LG:990347.41:2001JUN22	Sense Organs - 31%, Embryonic Structures - 14%,
		Skin - 11%
365	LG:998305.4:2001JUN22	Liver - 30%, Pancreas - 30%, Nervous System -
		20%
366	LG:463420.16:2001JUN22	Skin - 16%, Nervous System - 15%, Exocrine
		Glands - 11%
367	LG:979059.3:2001JUN22	Skin - 25%, Unclassified/Mixed - 20%, Exocrine
		Glands - 11%
368	LG:1045509.22:2001JUN22	Connective Tissue - 28%, Urinary Tract - 15%,
		Musculoskeletal System - 13%
	LG:246935.4:2001JUN22	Germ Cells - 30%
370	LG:321069.2:2001JUN22	Unclassified/Mixed - 13%, Stomatognathic
		System - 13%, Urinary Tract - 12%
371	LG:346724.14:2001JUN22	Unclassified/Mixed - 17%, Sense Organs - 13%,
	·	Embryonic Structures - 10%
372	LG:411043.3:2001JUN22	Pancreas - 15%, Exocrine Glands - 13%, Nervous
		System - 12%, Urinary Tract - 12%
373	LG:978620.7:2001JUN22	Embryonic Structures - 30%, Unclassified/Mixed -
		20%, Digestive System - 13%, Male Genitalia -
		13%, Exocrine Glands - 13%
374	LG:982784.1:2001JUN22	Germ Cells - 52%

		IABLE 0
SEQ ID NO:	Template ID	Tissue Distribution
375	LG:007574.21:2001JUN22	Unclassified/Mixed - 22%, Pancreas - 11%,
		Digestive System - 10%
376	LG:013856.18:2001JUN22	Skin - 14%, Female Genitalia - 10%
377	LG:027320.7:2001JUN22	Unclassified/Mixed - 27%, Liver - 19%, Embryonic
		Structures - 19%
378	LG:077967.9:2001JUN22	Germ Cells - 33%, Hemic and Immune System -
		10%
379	LG:128475.9:2001JUN22	Unclassified/Mixed - 15%, Musculoskeletal
		System - 15%, Embryonic Structures - 15%
380	LG:1398104.15:2001JUN22	Germ Cells - 31%, Unclassified/Mixed - 19%
381	LG:1454018.10:2001JUN22	Germ Cells - 15%
382	LG:221548.14:2001JUN22	Germ Cells - 12%, Sense Organs - 12%
383	LG:227500.5:2001JUN22	Connective Tissue - 26%, Embryonic Structures -
		15%
384	LG:228273.22:2001JUN22	Unclassified/Mixed - 15%, Nervous System - 15%,
		Embryonic Structures - 13%
385	LG:235432.1:2001JUN22	Embryonic Structures - 20%, Germ Cells - 15%,
		Hemic and Immune System - 14%
386	LG:236904.20:2001JUN22	Cardiovascular System - 14%, Skin - 11%
387	LG:253193.21:2001JUN22	Liver - 22%, Embryonic Structures - 12%
388	LG:332161.3:2001JUN22	Nervous System - 32%
389	LG:332923.5:2001JUN22	Sense Organs - 42%, Nervous System - 35%,
200		Embryonic Structures - 15%
390	LG:343500.27:2001JUN22	Unclassified/Mixed - 30%, Embryonic Structures -
201	1 C-240702 0-0003 HINDS	21%, Male Genitalia - 14%
391	LG:369703.9:2001JUN22	Urinary Tract - 13%, Nervous System - 12%,
200	1 C. 41 E 2 70 2.0001 II INO	Respiratory System - 10%
392	LG:415378.3:2001JUN22	Germ Cells - 18%, Embryonic Structures - 14%, Female Genitalia - 10%
393	LG:458583.1:2001JUN22	The second of th
393 394	LG:7690373.1:2001JUN22	Male Genitalia - 50%, Nervous System - 50%
394	LG./0903/3.1.2001J0IN22	Male Genitalia - 40%, Nervous System - 40%,
395	LG:898324.13:2001JUN22	Hemic and Immune System - 20% Skin - 30%, Unclassified/Mixed - 28%,
J90	LG.070024. 13.2001JUN22	Connective Tissue - 15%
396	LG:979167.5:2001JUN22	
370	LG.7/910/.0.2001JUNZZ	Sense Organs - 17%

Annotation	data source:SPTR, source key:Q9RYW0, evidence:ISS~putative~related to	ACYL-COA DEHYDROGENASE, PUTATIVE	Unknown (protein for MGC:5601)	probable acyl-CoA dehydrogenase	Unknown (protein for IMAGE:3352566)	KRAB zinc finger protein; Method: conceptual translation supplied by	Unknown (protein for MGC:21259)	unnamed protein product	hypothetical protein	dJ31316.6 (zinc finger protein 165)	zinc finger protein	zinc finger protein 43 (HTF6)	ZNF43 ZNF43	unnamed protein product	zinc finger protein ZNF135	zinc finger protein	ferritin heavy subunit (AA 1 - 182)	ferritin heavy chain	ferritin heavy chain	unnamed protein product	data source:SPTR, source key:Q9JIB8, evidence:ISS~putative~similar to KRAB	ZINC FINGER PROTEIN	Similar to zinc finger protein 97	KIAA1473 protein	hematopoietic cell derived zinc finger protein	unnamed protein product	Rabs GDP/GTP exchange factor. Rabexs	putative Rabs GDP/GTP exchange factor homologue	Rabs GDP/GTP exchange factor homologue	KIAA1473 protein	hematopoietic cell derived zinc finger protein	unnamed protein product
GI Number Probability Score	1.00E-113 d	•	1.00E-102 U	4.00E-80 p	1.00E-31 U	5.00E-26 K	2.00E-25 U	4.00E-49 u	9.00E-46 h	3.00E-45 d	, , ,	, Z	0	0	1.00E-138 zi	1.00E-138 zi	1.00E-104 fe	1.00E-104 fe	1.00E-104 fe	2.00E-21	3.00E-11 d	IZ	4.00E-11 Si	2.00E-38 KI	6.00E-36 h	9.00E-35 ul	8.00E-95	2.00E-94 p	2.00E-94 R	1.00E-38 KI		4.00E-35 ur
GI Number P	g12846107		g13277578	g9948609	g12652727	g1049301	g15080547	g16551755	g12053235	g7981299	g186774	g16306806	g38032	g16549180	g488555	g5441615	g50952	g485373	g309232	g14042850	g12851033		g12805201	97959207	g3342002	g16553225	g2558516	g15929821	90013006	g7959207	g3342002	g16553225
Stop	2203		2203	2203	1015	1015	1015	752	752	752	1377	1377	1377	1442	1442	1442	-682	682	682	333	333		333	629	629	629	843	8	843	351	351	351
Start	1385		1385	1385	53	ಜ	ಜ	က	က	က	_	_	_	က	က	က	8	0	0		_		_	24	54	24	253	253	253	_	_	_
Length	273		273	273	321	321	321	250	250	250	459	459	459	480	480	480	227	227	227]]	Ξ		Ξ	202	202	202	197	197	197	117	117	117
Frame	7		7	7	2	8	8	က	က	က	-	_	_	က	က	က	7	ä	7	_	_		_	က	က	က	_	- -	_	_	 -	-
SEQ ID NO: Frame Length Start	397		397	397	398	398	398	399	399	366	94	8	400	6	_ 6	4	403	403	403	404	4		404	405	405	405	407	407	407	408	408	408

Annotation	unnamed protein product	diring protein product		put. LLRep3 protein (AA 1-221)	ibosomal protein S2	Jnknown (protein for MGC:15956)	unnamed protein product	Ly-6/neurotoxin homolog	Ly6/neurotoxin 1~data source:MGD, source key:MGI:1345180,	evidence:(SS-putative	Similar to zinc finger protein 296	data source: MGD, source key: MGI: 1926956, evidence: ISS-putative-zinc	finger protein 296	zinc finger protein	Bax beta	Jnknown (protein for MGC:20956)	Human Bax	unnamed protein product	hypothetical protein	Jnknown (protein for IMAGE:4178394)	bA14C22.1 (novel protein similar to lysozyme)	bA534G20.1.1 (novel protein similar to Lysozyme C-1 (1,4-beta-N-	acylmuramidase C, EC 3.2.1.17) (isoform 1))	similar to lysozyme C-1 (1,4-beta-N-acylmuramidase C. EC 3.2.1.17)	Similar to PCTAIRE-motif protein kinase 3	Unknown (protein for IMAGE:3357514)	serine/threanine protein kingse	hypothetical profein	dJ337O18.4 (novel protein)	SNX21
				_	_	_	_	_	_	б	ij		ff.					5	_				ğ							
obability (1.00E-146	1.005	71-100.	1.00E-124	1.00E-124	1.00E-124	1.00E-60	2.00E-52	2.00E-52	•	0	1.00E-135		1.00E-134	1.00E-128	2.00E-88	2.00E-88	0	1.00E-77	2,00E-39	3.00E-62	2.00E-60		8.00E-60	6.00E-95	6.00E-95	2.00E-92	1.00E-129	1.00E-129	1.00E-129
GI Number Probability Score	910552245	7730100	97237107	g34392	g2920833	g18203799	g12310941	g5059156	g12851336		g17939572	g12843135		g11602755	g3881 <i>6</i> 8	g15559636	g12309964	g15209690	g13676427	g14250369	g15717944	g11990770		g18204355	g15079361	g12653035	g297102	g14149068	g13929449	g14719307
	000	800	3 5	200				776	776			1089		1089	969	695	969	1264	1264	1264		8					8		1185	-
Start	327 705	327	3 0	.7	8	0	210	210	210		_	_		_	က	က	က	155	155	155	7	7		7	198	198	198	469	469	469
ength	25.0	7 7	3 8	777	224	224	189	189	189		363	363		363	231	231	231	370	370	370	136	136		136	265	265	265	239	239	239
Frame L) r) e) (7	7	7	က	က	ო		_	_		_	က	က	က	2	8	7	7	7		7	က	က	က	_	_	-
SEQ ID NO: Frame Length	\$ \$	€	} {	410	410	410	411	411	411		412	412		412	413	413	413	414	414	414	415	415		415	416	416	416	417	417	417

Annotation	ESTs D15590(C0900), D48950(S15542), D22684(C0900) correspond to a region	of the predicted gene.~Similar to Arabidopsis thaliana 60S ribosomal	protein L11A (L16A). (P42795)	ribosomal protein L11-like	ribosomal protein L11-like	R27945_1	unnamed protein product	KIAA0412	ribosomal protein L22	ribosomal protein L17	data source:MGD, source key:MGI:96103, evidence:ISS~hexokinase	1-putative	MORN-domain protein	putative phosphatidylinositol-4-phosphate 5-kingse: 11335-7537	putative phosphatidylinositol-4-phosphate 5-kingse	hypothetical protein	low-density lipoprotein receptor-related protein 5	Lipoprotein Receptor Related Protein 5	EGF-related protein SCUBE1	CEGP1 protein	Cegp profein	CUB and sushi multiple domains 1 protein	CSMD1	KIAA1884 protein	hypothetical protein	F25965_3	Unknown (protein for IMAGE:4300179)	Unknown (protein for MGC:14333)	Jnknown (protein for MGC:17396)	myosin phosphatase taraetina subunit 3 MYPT3	unnamed protein product	Unknown (protein for MGC:2663)
Probability Score	3.00E-88	•		6.00E-87	8.00E-87		1.00E-146		4.00E-97	4.00E-97	4.00E-97		3.00E-17	7.00E-13	7.00E-13	1.00E-129	1.00E-121	1.00E-121	0	0	0	0		1.00E-175			3.00E-89 (0	0	1.00E-180	1.00E-140
_	g7340874			g10/99832	g9758681	g2689446	g16549907	g3289985	g57111	g13278090	g12847063		g15487218	912323331	g18491177	g6807718	g3641527	g3582145	g10998440	g8052237	g8052320	g14794726	g14787176	g15620827	g6808293	g2477513	g15559435	g14043803	g18654480	g14307916	g7019945	g12804721
Stop	83		,	3	634	1416	1416	1416	8	8	8		719	719	719	1869	1869	1869	2093	2093	2093	1422	1422	1422	2388	2388	2388	2636	2636	2636	1655	1655
Start	7		;	4	7	8	36	9	52	52	52		147	147	147	1027	1027	1027	က	က	က	_	_	_	247	247	247	696	696	696	84	84
Length	207		7	%	202	437	437	437	172	172	172		161	16	161	281	281	281	269	269	269	474	474	474	714	714	714	22 6	556	556	524	524
Frame	7		c	.7	7	_	_	_	_	_	_		ო	က	က	_	_	,	က	က	က	_	_	_	_	_	_	က	က	ო	ന	ო
EQ ID NO: Frame Length Start	418		9.7	418	418	419	419	419	420	420	420		421	421	421	422	422	422	423	423	423	425	425	425	426	426	426	427	427	427	428	428

Annotation	unnamed protein product	putative gene, ankirin like, possible dual specifity Ser/Thr/Tyr kinase domain	hypothetical protein	probable dual-specificity Ser/Thr/Tyr kingse	KRAB zinc finger protein	zinc finger 1111	KIAA1611 protein	KIAA1626 protein	Unknown (protein for IMAGE:4016433)	unnamed protein product	CG9996 gene product	Unknown (protein for IMAGE:4649498)	contains similarity to Pfam domain: PF01501 (Glycosyl transferase family 8).	Score=-25.1, E-value=7.4e-05, N=1	QM protein	, MG	Wilm's tumor-related protein	serologically defined breast cancer antigen NY-88-96	data source:SPTR, source key:Q9H272, evidence:ISS~homolog to	SEROLOGICALLY DEFINED BREAST CANCER ANTIGEN NY-BR-96~Dutative	amyotrophic lateral sclerosis 2 (juvenile) chromosome region, candidate 2	unnamed protein product	data source:MGD, source key:MGI:1891227, evidence:ISS~endothelial	differentiation-related factor 1~putative	data source:MGD, source key:MGI:1891227, evidence:ISS~endothelial	differentiation-related factor 1~putative	a disintegrin-like and metalloprotease with thrombospondin type 1 motif 14	precursor	unnamed protein product	procollagen I N-proteinase	polydom protein	serologically defined breast cancer antigen NY-BR-38
Probability Score	_	4.00E-17 p	6.00E-17 h		4.00E-69 K	1.00E-67 z	6.00E-67 K	0	0	ر .	5.00E-90 C		2.00E-11 c	S	3.00E-34 G		3.00E-34 V	1.00E-173 s	1.00E-161 c	S	7.00E-73 c	2.00E-79 u	2.00E-79 c		2.00E-79 c		0			2.00E-56 p	Ö	1.00E-170 se
	g16552245	g7768736	g6808021	g14245729	g14348588	g13752754	g10047297	g10047329	g18256873	g7022610	g7301264	g15990444	g3878455		g407466	g402827	g190814	g12060855	g12847582		g14249854	g7259240	g12834293		g12832255		g17483854		g15523694	g1865716	g11177164	g12060830
Stop	1655	2%	28	290	832	832	832	3586	3586	3586	<u>=</u>	<u>5</u>	102		483	483	483	1043	<u> </u>		1043	208	208		208		1363	,	3	1363	2646	2646
Start	84	245	245	245	23	23	23	7	8	7	_	_	_		115	115	115	%	8		8	7	~		N	,	0	(.7	0	_	_
-ength	524	182	182	182	270	270	270	1195	1195	1195	368	368	368		123	123	123	316	316		316	991	169	,	99	,	454	į	4 4 4	4 2	882	882
Frame Length	က	7	7	8	7	7	~	7	7	8	_		_		-	_	_	က	က		က	7	7		7	(7	C	7	7	_	-
SEQ ID NO:	428	429	429	429	430	430	430	431	431	431	432	432	432		434	434	434	435	435		435	436	436	;	436	!	43/	707	3	437	439	439

Apportation	CSMD1	E1b 55k protein (transformation)	transformation-associated protein	54.7 kDa	guanylate binding protein 4	Similar to guanylate nucleotide binding protein 3	purine nucleotide binding protein	Unknown (protein for MGC:20847)	BC273239_1	Similar to zinc finger protein 347	data source:SPTR, source key:Q9H334, evidence:ISS~homolog to FORKHEAD	BOX PROTEIN P1 ~putative	Unknown (profein for IMAGE:3885983)	putative forkhead/winged-helix transcription factor	KIAA0478 protein	zinc finger protein	mkr3 C	Ank repeat containing protein~data source:Pfam, source key:PF00023	evidence:(SS~putative	CG13320 gene product	fgene product	match to EST AA361117 (NID:q2013436)	dJ513M9.1 (novel Homeobox domain protein)	hypothetical protein	semaphorin Y short isoform 1	semaphorin Y	KIAA1869 protein	beta cystelne string protein	Unknown (protein for MGC:26226)	data source:SPTR, source key:P54101, evidence:ISS~putative~similar to Cysteine stains aporting to contract to cont	hypothetical protein
obability Scor	1.00E-117	0	0	1.00E-169	0	1.00E-169	1.00E-168	0	1.00E-128	1.00E-128	0		1.00E-172	1.00E-114	0	7.00E-53	3.00E-52	0		4.00E-38	1.00E-14	8.00E-77	1.00E-20	8.00E-15	0	0	0	1.00E-120	1.00E-120	1.00E-110	5.00E-86
GI Number Probability Score	g14787176	g58491	g209820	g17105043	g15558943	g17512480	g1174187	g15559603	g4559318	g15929737	g12836052		g16877224	g15919272	g3413918	g220637	g53133	g12842288		g7303380	g7293339	g3900848	g5441412	g13620482	g18462030	g12081909	g14017955	g14334177	g16876924	g12838488	g6453538
Stop	2646 2646	1792	1792	1792	161	161	1611	1476	1476	1476	1059		1059	1059	1907	1907	1907	1275		1275	1275	581	581	581	3303	3303	3303	842	842	842	1049
Start	_	38	305	305	367	367	367	28	88	28	_		_	_	615	615	615	9		9	9	8	8	8	150	150	1150	243	243	243	က
Length	882	496	496	496	415	415	415	473	473	473	323		353	353	[3]	431	431	420		420	420	172	172	172	718	718	718	200	200	200	349
Frame 1		7	8 1	7	_	_	_	_	-	_	_		,	_	က	က	က	_		_	_	က	က	က	_	_	_	ო	က	က	က
SEQ ID NO: Frame Length	439	944	044	440	4	4	44	442	442	442	· 443		443	443	444	44	444	445		445	445	44 6	4 2	4	447	447	447	448	448	448	451

Annotation	KIAA0379 protein		protein	hypothetical protein	Similar to hypothetical protein DKF2p434L0718	kelch-like protein KLHL6	unnamed profein product	KIAA1129 protein	unnamed protein product	otein .	p21-activated protein kinase 6	unnamed protein product	data source:SPTR, source key:Q9P2N7, evidence: ISS~homolog to	HYPOTHETICAL PROTEIN KIAA1309 (FRAGMENT)~putative	KIAA1354 protein	lbosomal protein L5	ribosomal protein L5 (AA 1-297)	data source:MGD, source key:MGI:102854,	evidence:ISS~putative~ribosomal protein L5	predicted protein dJ257A7.2	dJ899C14.1 (novel profein similar to KIAA0680)	IKe	hypothetical protein	unnamed protein product	ofein	Similar to RIKEN cDNA 2410153K17 gene	•	Unknown (protein for IMAGE:3461982)	2 protein	cerebral cell adhesion molecule	unnamed protein product	unnamed protein product
	KIAA037	ankyrin 1	FLJ00040 protein	hypothe	Similar to	kelch-lik	unname	KIAA112	unname	pak5 protein	p21-acti	unname	data sou	HYPOTH	KIAA135	ribosomo	ribosom	data sou	evidenc	predicte	dJ899C1	Q9H4T4 like	hypothe	unname	HOTTL protein	Similar to	R30923_1	Unknowr	KIAA1502 protein	cerebral	unname	unname
Probability Score	9 g6634025 3.00E-28 K	5.00E-28	0	0	0	1.00E-108	6.00E-33	2.00E-26	0	0	0	o	3.00E-59		1.00E-58	1.00E-165	1.00E-163	1.00E-162		1.00E-87	2.00E-51	2.00E-51	0	0	1.00E-176	1.00E-120	1.00E-120	1.00E-104	0	0	0	O
GI Number F	g6634025	g7385113	916549119	g12053081	g16741323	g17105197	g10439155	g6329805	g14274810	g11691855	g90823Ó6	g10434090	g12836022		g7243089	g206734	g57125	g12850263		g2827474	g10241527	g15485622	g5419859	g10436084	g6683745	g14603176	g4106984	g13277582	g7959265	g5764665	g14035822	g16549907
Stop	1049	1049	3286	3286	3286	648	648	648	2241	2241	2241	1426	1426																		3316	
Start	က	က	107	107	107	_	_	_	139	139	139	182	182		182	_	_	-		_	_	_	1845	1845	1845	8	8	7	1535	1535	1535	_
Length	349	349	090	1060	900	216	216	216	10	20	<u>6</u>	415	415		415	298	298	298		159	159	159	366	38	366	220	220	220	594	594	594	20
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SEQ ID NO:	451	451	452	452	452	4 54	454	45 4	455	455	455	456	456		456	457	457	457		458	458	458	459	459	459	460	460	460	4 61	461	461	462

KIAA0412 Annotation	Unknown (profein for MGC:4400)	unnamed protein product	zinc-finger protein ZBRK1	succinate dehydrogenase complex, subunit A, flavoprotein (Fp)	flavoprotein subunit of complex II	succinate dehydrogenase flavoprotein subunit	acetyl-CoA carboxylase	acetyl-CoA carboxylase	acetyl-CoA carboxylase	ad1-antigen	tetraspanin membrane protein CD63	Similar to Cd63 antigen	dJ351K20.1.1 (novel C3HC4 type Zinc finger (RING finger) protein (Isoform	unnamed protein product	dJ351K20.1.2 (novel C3HC4 type Zinc finger (RING finger) protein (Isoform	hnrnp a1 protein	RNA binding protein	TIS	GAP-related protein	neurofibromin	neurofibromin	ankyrin	ankyrin (variant 2.1)	ankyrln	translation initiation factor 5A	translation initiation factor 5A	translation initiation factor 5A	Elongation factor 1-alpha (AA 1 - 461)	eukaryotic translation elongation factor 1 alpha 1-like 14	elongation factor 1 alpha
Probability Score 1.00E-160	0	1.00E-125	1.00E-125	2.00E-90	2.00E-90	6.00E-90	0	0	0	1.00E-37	1.00E-37	1.00E-37	0	0	0	1.00E-158	1.00E-158	1.00E-158	0	0	0	0	0	0	2.00E-89	2.00E-89	2.00E-83	1.00E-58	2.00E-57	2.00E-57
GI Number Pr g2887445	g13436440	g10435411	g10442700	g12655061	g506338	g347134	g452316	g2138330	g3080546	g55602	g5410605	g15126559	g7159799	g14042318	g7159800	g296650	g193324	g1711242	9189165	g292354	g1841314	g178646	g28702	g1845265	g2668738	g1546919	g3789948	g50797	g927065	g7649316
Stop 1500	186	1961	1961	8	709	709	7195	7195	7195	393	393	393	1543	1543	1543	974	974	974	5014	5014	5014	5513	5513	5513	553	553	553	743	743	743
Start	492	492	492	7	7	7	4337	4337	4337	2	2	0	371	371	371	ຫ _.	က	က	8	8	8	8	8	8	7	8	8	28	182	132
-ength 500	8	490	490	236	236	236	953	953	953	. 128	128	128	391	391	391	324	324	324	1653	1653	1653	1536	1536	1536	184	184	184	<u>8</u>	184	184
Frame Length 1 500	. ო	က	က	7	7	7	7	7	7	_	_	_	7	8	7	က	က	က	7	7	7	က	က	က	8	7	7	က	က	က
Ö	463	463	463	464	464	464	465	465	465	466	466	466	467	. 467	467	468	468	468	469	469	469	470	470	470	471	471	471	472	472	472

Annotation	cationic amino acid transporter 2	hCAT-2A	T-cell early activation protein	KIAA1141 protein	Jnknown (protein for MGC:20009)	zinc finger protein ZFP100	unnamed protein product	zinc finger protein zfp6	unnamed protein product	ropomyosin 5	nopomyosin	ropomyosin isoform 6	hypothetical protein	orotocadherin-9	hypothetical protein	ו-אום	DLX-1	DİXI	Zinc finger, C3HC4 type (RING finger) containing protein~data	source:Pfam, source key:PF00097, evidence:ISS~putative	Zinc finger, C3HC4 type (RING finger) containing protein~data	source:Pfam, source key:PF00097, evidence:ISS~putative	estrogen responsive finger protein (efp)	unnamed protein product	unnamed protein product	numan ublautitin processina protease. EC 3.1.2.15	cardiac lelomodin	Unknown (protein for IMAGE:4291177)	64 Kd autoantigen	Similar to RIKEN cDNA B830026H24 gene
GI Number Probability Score	0	0	0	0	0	0	1.00E-161	1.00E-150 z	1.00E-132	2.00E-43	2.00E-43	2.00E-43	0	0	0	1.00E-107	1.00E-107	2.00E-91	5.00E-73 Z		3.00E-22 Z	••	1.006-17		0	2.00E-63	1.00E-122	1.00E-73	2.00E-72 6	0
GI Number P	g849051	g2252786	g476725	g6329952	g17391340	g17981470	g16551429	g1613848	g14042415	g54912	g438878	g312928	g14388339	99845485	g13874450	g1477586	g1477588	g1620514	g12845866	•	g12833017		g458726	g16508652	g16508650	g7717310	g12656196	g17389801	g28969	918204012
Stop	2143	2143	2143	2874	2874	2874	1630	1630	1630	1187	1187	1187	3215	3215	3215	1298	1298	1298	954		25	,	8 8	1672	1672	1672	1626	1626	1626	1223
																			322											
Length	714	714	714	947	947	947	426	426	426	93	જ	છ	1067	1067	1067	345	345	345	511		211		211	465	465	465	536	536	536	358
		7														က	က	က	_		,		-	7	8	7	_	_	_	က
																478	478	478	479		479	į	479	480	480	480	481	481	481	482

Annotation data source; SPTR, source key:P97584, evidence: ISS~homolog to NADP-DEPENDENT LEUKOTRIENE B4 12-HYDROXYDEHYDROGENASE (EC 1.1.1)	weak similarity with quinone oxidoreductase, contains similarity to Pfam domain: PF00107 (Zinc-binding dehydrogenases), Score=-80.6, E-value=6.2e-06, N=1~cDNA EST yk164b4.3 comes from this gene~cDNA EST yk164b4.3	put. HBK2 protein (AA 1-529)	put, RCK2 protein (AA 1-530)	murine potassium channel protein	AT3g13580/K20M4_2	AT3g13580/K20M4_2	60S ribosomal protein L7	data source:SPTR, source key:P07108, evidence: ISS~homolog to ACYL-COA	BINDING PROTEIN (ACBP) (DIAZEPAM BINDING INHIBITOR) (DBI)	(ENDOZEPINE) (EP)-putative	diazepam-binding inhibitor	ACBP/DBI	PACE4A-II	PACE4A-II	subtilisin-like protease	DNA recombination and repair protein	meiotic recombination 11	endo/exonuclease Mre 1 1	ADP-ribosylation factor family containing protein-data source:Pfam,	source key:PF00025, evidence:ISS~putative	dJ341D10.2 (similar to ADP ribosylation factor 3)	ADP-ribosylation factor family containing protein~data source:Pfam,	source key:PF00025, evidence:ISS~putative	hypothetical protein	HSPC059	KRAB zinc finger protein
GI Number Probability Score g12861800 0	5.00E-84	0	0	0	1.006-111	1.00E-111	1.00E-111	1.00E-36		J	1.00E-35	3.00E-35		0	0	0	0	0	6.00E-76	65		6.00E-39			3.00E-10	4.00E-10
	g3878713	g32033	957667	9199893	g18655395	g14532552	g11994560	g12860912			g514280	g765223	g2330553	g2281776	g189532	g2827086	g13324574	g3328152	g12855841		g17736646	g12855722		g15021881	g7239109	g8575775
Stop 1223	1223	2458	2458	2458	8	98	8	8			ဓ္ထ	8	2700	2700	2700	2260	2260	2260	757		727	757		8	8	8
Start 150	150	1112	1112	1112	8	7	8	7			7	8	1033	1033	1033	176	176	176	86		86	8	!	602	6 02	802
angth 358	358	449	449	449	253	253	253	8			8	8	556	556	556	695	969	969	220		220	220	:	ფ :	જ	છ
Frame L	ო	8	7	2	7	7	7	7			7	7	_	_	_	8	7	7	7		7	8	4	7	7	0
SEQ ID NO: Frame Length Start 482 3 358 150	482	. 483	483	483	484	484	484	485			485	485	486	486	486	487	487	487	488		488	488		489	489	489

Annotation	data source:SPTR, source key:O75989, evidence:ISS~homolog to DJ422F24.1	(PUTATIVE NOVEL PROTEIN SIMILAR TO C. ELEGANS C02C2.5)	(FKAGIMENI)~DUTQTIVE	dJ422F24.1 (PUTATIVE novel protein similar to C. elegans C02C2.5)	CG6279 gene product	match: multiple proteins; match: Q08151 P28185 Q01111 Q43554; match:	G08150 Q40195 P20340 Q39222; match: Q40368 P36412 P40393 Q40723;	match: CE01798 Q38923 Q40191 Q41022; match: Q39433 Q40177 Q40218	G08146; match: P10949 P11023 G16948 G20337; match; G25389 P25228	P20336 P05713; match: P35276 Q08147 P17609 P22128; match: Q15771	P36410 P35291; GTP-binding	UL36 protein	proline-rich proteoglycan	putative N-acetyltransferase Camello 2	camello-like 4	camello-like 4~data source:MGD, source key:MG :1915646.	evidence:1SS-putative	Rab-related GTP-binding protein RabJ	Rab-related GTP-binding protein	YptC4	beta 1.3 N-acetvalucosaminytransferase 1.3 synthase	beta1,3-N-acetylglucosaminyltransferase 5	unnamed protein product	high-risk human papilloma viruses E6 oncoproteins targeted protein E6TP1	alpha; putative GAP protein alpha	unnamed protein product	unnamed protein product	BC331191_1	hypothetical protein	F23269_2	Unknown (protein for MGC:15514)	hypothetical protein
Probability Score	_					6.00E-20				_		2.00E-06	9.00E-06	7.00E-24			•	1.00E-159	1.00E-149 F				1.00E-171	0	U	0	٥	0	1.00E-177 h		8.00E-89	
GI Number	g12832288			93/5//19	g7294769	g2276313						g17939907	g310200	g6651438	g18043508	g12833022		g7271471	g]4486426	g806722	g14039836	g13568434	g14597533	g4151328		g17128219	g17128217	g5080758	g15021881	g3540177	g13938261	g5262557
Stop	724		ç	124	724	<u>\$</u>						₹	<u>\$</u>	200	200	2		843	8	843	1361	1361	1361	3457		3457	3457	1953	1953	1953	726	726
Start	7		(Ν.	8	က						က	က	က	ო	က		22	22	22	483	483	483	692		682	692	 -	_	_	_	_
ength	241		;	74	241	214						214	214	196	196	3%		273	273	273	293	293	293	922		922	922	651	651	651	242	242
Frame L	7		(7	7	က						က	က	က	က	က		_		_	က	က	က	7		7	7	_	_	_	_	_
SEQ ID NO: Frame Length Start	490		Ş	4 5 0	490	491						461	491	492	492	492		493	493	493	494	494	494	495		495	495	496	496	496	497	497

		o ZINC											٠																
Annotation Annotation annumed protein product	BC331191_1	data source:SPTR, source key:P16374, evidence:ISS~putative~similar to ZINC EINICED DECTEIN ACC 33	transcription factor NFAT5 isoform b	KIAA0827 protein	tonicity-responsive enhancer binding protein	BM-010	protein synthesis initiation factor 4A	Unknown (protein for MGC:27241)	KIAA1203 protein	Unknown (protein for MGC;38313)	CG3872 gene product	WSB-1 isoform	WSB1 protein	WSB-1 protein	FLAMINGO 1	Flamingo 1	Similar to D.melanogaster cadherin-related tumor suppressor	unnamed protein product	dJ402H5.2 (novel protein similar to worm and fly proteins)	CG11212 gene product	HI01494p	CG1271 gene product	probable glycerol kinase, similar to sugar kinases protein	dopamine-responsive protein	COBW-like protein	COBW-like protein	S-100 protein	S100 protein	S100 beta protein
obability Score 3.00E-86 1.00F-109	1.00E-109	4.00E-63	0	0	0	3.00E-61	1.00E-49	1.00E-49	0	1.00E-106	3.00E-52	1.00E-129	1.00E-109	1.00E-109	0	0	0	0	6.00E-87	3.00E-48	4.00E-45	2.00E-42	1.00E-39	0	0	0	4.00E-48	4.00E-48	1.00E-47
GI Number Pr g16552172 a3540177	g5080758	g12855931	g5726476	g4240143	g14571715	g7582292	g673433	916198386	g6330433	g18204471	·g7291841	g5410334	g7145106	g6563198	99828190	g5832711	g1665821	g16549477	g12214288	g7302178	g16768654	g7292299	g15141022	g13177623	g13543692	g15488579	g57175	g206825	g404769
Stop 726 1611	161	161	4153	4153	4153	510	510	510						3072	8683	8683	8683	1479	1479			8			_	1280	316	316	316
Start 1 685	685	685	518	518	518	121	121	121	7	8	7	2410	2410	2410	7	7	7	_	_	,_	က	က	က	8	8	8	56	56	8
ength 242 309	300	309	1212	1212	1212	130	130	130	665	665	665	22	221	221	2894	2894	2894	493	493	493	299	2%	233	397	397	397	26	44	25
Frame Length 1 242 1 309	_	-	7	7	2	_	-	_	7	7	7	_	_	_	7	7	7		-	_	က	က	က	က	က	က	7	7	2
SEQ ID NO: 497 498	498	498	499	499	499	200	200	200	50	103	<u>8</u>	502	205	502	503	503	503	5 0	504	8 8	505	505	505	20 6	206	2 06	204	207	202

Annotation	Unknown (protein for IMAGE:2989556)	data source:SPTR, source key:P22978, evidence:ISS~putative~related to	HEAT SHOCK PROTEIN 6782	heat shock protein	·\	Run- and FYVE-domain containing protein Rabip4R	KIAA1537 protein	BTB/POZ domain containing protein~data source:Pfam, source	key:PF00651, evidence:ISS-putative	RIKEN cDNA 4930429H24 gene	unnamed protein product	KIAA1663 protein	. 22	bK223H9.1 (TOB4 (BTG1 family protein))	unnamed profein product	bA438B23.1 (neuronal leucine-rich repeat protein)	unnamed protein product	Jnknown (protein for MGC:25259)	Zinc finger protein s] 1-6	ZNF180		Similar to regulator of differentiation (in S. pombe) 1	5	unnamed protein product	JM protein prickle b	JIM protein prickle	putative katanin	putative katanin	probable katanin-like protein	unnamed protein product	fatty acid hydroxylase	Jnknown (protein for MGC:4282)
Те	Ş	g	H	hec	RUFY2	Run	Α Α	BTB	көу	Z Z	S	ΑĀ	Tob2	PK2	ב	ρĄ	S	Ş	Zinc	ZNF	Rodl	Sim	Rod	כט	Σ	₹	put	ğ	<u>D</u>	2	fatt	C
obability Sco	3.00E-41	6.00E-16		1.00E-14	1.00E-116	1.00E-116	1.00E-116	0		0	0	0	0	0	1.00E-146	1.00E-146	1.00E-146	2.00E-51	2.00E-51	7.00E-51	0	0	0	0	0	0	2.00E-60	3.00E-53	9.00E-48	0	1.00E-173	1.00E-173
GI Number Probability Score	g12804565	g12847848		g8063	g18266358	g15625568	g7959341	g12853497		g18204103	g7019911	g13359199	g6469034	g6572197	g13444976	g12309630	916551759	g15928468	g3953593	g8050899	g4514554	g13879326	g4514552	g16551917	g16356673	g14595658	g18461184			g16554016	g13279059	g12803687
	330			9 9 9	0111					1260	1260	1392	1392	1392	910					1150	<u>3</u>	<u>16</u>	1604	2800	2800	2800	643	8	8	1172	1172	1172
Start	_	_		_	439	439	439	_		,- -	_	352	352	352	7	7	7	692	692	692	207	207	207	284	284	284	8	7	7	က	က	က
ength.	130	33		ဥ	224	224	224	420		420	420	347	347	347	303	303	303	153	153	153	466	466	466	839	839	839	214	214	214	380	390	330
Frame L	-	_		_	_	_	_	_		_	_	_	_	_	7	7	7	7	7	7	က	က	က	7	7	7	7	7	7	က	က	ო
SEQ ID NO: Frame Length Start	208	508		208	509	203	204	ยา		ยม	511	512	512	512	513	513	513	514	514	514	515	515	515	516	516	516	517	517	517	518	518	518

Annotation	tripartite motif protein TRIM4 isofa	tripartite motif protein TRIM4 isoform beta	Similar to tripartite motif protein 4	KIAA0886 protein	RTN-xL	reficulon 4a	Similar to SWI/SNF related, matrix associated, actin dependent regulator of	chromatin, subfamily d, member 2	BAF60b	BAF60b	nucleolysin TIAR	TIA1 cytotoxic granule-associated RNA-binding protein-like 1	RNA binding protein TIAR	evidence:NAS~hypothetical protein~putative	unnamed protein product	unnamed protein product	dJ1121G12.1.2 (A novel protein containing a putative PHD finger domain,	isoform 2)	transcription factor TZP	Unknown (protein for IMAGE:3709746)	TAK1 binding protein	dJ407F17.1 (TAB1 (TAK1 binding protein 1))	TABI	Domain of unknown function DUF36 containing protein-data source:Pfam,	source key:PF01795, evidence:ISS~putative	CG14683 gene product	GH10770p	ALL-1 protein	HRX XNH	All-1 protein	DHHC zinc finger domain containing protein~data source:Pfam, source	Key:Pt01529, evidence:ISS~putative
Probability Score	0	0	1.00E-116	0	0	0	0	•	0	0	1.00E-164	1.00E-163	1.00E-160	3.00E-67	2.00E-31	4.00E-30	1.00E-108		1.00E-108	2.00E-96	0	0	0	1.00E-161		6.00E-65	6.00E-65	0	0	0	1.00E-163	
GI Number P		g12407379	g15079952	g4240261	g11610575	g10039551	g13543110		g2723484	g2723486	g189310	g14714709	g1592563	g12844788	g12578471	g12405785	g10241461		913195151	g15030164	g1401126	g5834565	g3057038	g12832845		g10726441					g12860837	
Stop	1574	1574	1574	3721	3721	3721	1719		1719	1719	1024	1024	1024	1206	1206	1206	2243		2243	2243	1548	1548	1548	1685		1685	1685	10436	10436	10436	1087	
Start	105	105	105	773	773	773	673		673	673	86	86	86	124	124	124	810		810	810	-	-	-	393		363	393	က	က	က	284	
Length	490	490	490	983	983	983	349		340	349	309	309	300	361	361	361	478		478	478	516	516	516	431		43	43	3478	3478	3478	268	
Frame Length	က	က	ო	2	7	7	_		_	-	7	7	7	_	_	_	က		ന	က	_	_	_	က		က	က	က	က	က	. 7	
SEQ ID NO:		519	519	520	220	520	521		521	521	522	522	522	523	523	523	524		524	524	525	525	525	526		226	526	527	527	527	928	

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			KIAA092																					Ce:ISS~(
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	ธ	eln	zure rela					protein 4		rich neu	for IMA	ein				produc	produc	-	ein	n BIG-3	official pro	-	product	, source	ative		product	homa st	product	
0	ne brodu	ical prot	3.1.2 (sel:	protein			protein	related	protein	leucine	(protein	ical prot	Tein	protein	protein	d protein	d protein		ical prof	at protei	hypothe	protein	d protein	rce:MGE	ed 4~put	protein	d protein	ive lymp	d protein	protein
LD14687p	Unzi gene product SEZ6L	hypothetical protein	dJ268D13.1.2 (seizure related gene 6 (mouse)-like (KIAA0927) (isoform 2))	KIAA1255 protein	Ankhzn	ANKHZN	KIAA1261 protein	groucho-related protein 4	groucho protein	Similar to leucine-rich neuronal protein	Unknown (protein for IMAGE:4152627)	hypothetical protein	ZASP protein	KIAA0613 protein	oracle 2 protein	unnamed protein product	unnamed protein product	윱	hypothetical protein	WD repeat protein BIG-3	Similar to hypothetical protein	KIAA1362 protein	unnamed protein product	data source:MGD, source key:MGI:1261419, evidence:ISS~ethanol	decreased 4~putative	KIAA1268 protein	unnamed protein product	B aggressive lymphoma short isoform	unnamed protein product	KIAA1466 protein
_		_										2		_		_	_	_					_		Ū	_	_			
Probability Score 4.00E-28	4.UUE-26 0	0	0	0	0	0	0	0	0	1.00E-125	1.00E-114	2.00E-64	0	0	Ò	0	0	0	1.00E-52	1.00E-52	1.00E-52	1.005-118	1.00E-109	1.00E-108		0	1.00E-172	6.00E-58	3.00E-31	7.00E-31
-	g/ <i>24///</i> 5 g13603398	g4886439	g6941613	00608896	g2914017	g6759376	30948	g7239366	3595	g13960126	14829	g6808196	1369	g3327040	g6969631	g2851884	g16073993	g1537030	g6714707	g16589079	g16359284	g7243105	g7023688	g12855942		1213	3247	51141	53621	g7959193
.	•																-			_		g724	g702	g128		.g6331213	g7023247	g12751141	g16553621	g795
Stop 1087	2331	2331	2331	3528	3528	3528	2402	2402	2402	110	0	1110	<u>1</u> 80	<u>8</u>	<u>8</u>	2285	2285	2285	549	549	549	2619	2619	2619		2067	2067	2067	620	620
Start 284	70 10 10 10 10 10 10 10 10 10 10 10 10 10	_	_	1624	1624	1624	36	36	36	3	163	163	က	ო	က	675	675	675	211	211	211	_	_	_		_	_	_	279	279
Length 268	712	717	777	635	635	635	788	788	788	316	316	316	633	633	633	537	537	537	113	113	113	873	873	873	1	689	689	689	114	114
Frame 2	7 –	_	_	_	_	_	က	က	က	_	_	~	ო	က	ო	က	က	က	_	<u>-</u>	_	_	_	_	,	_	_	_	က	က
SEQ ID NO: Frame Length 528 2 268 528 2 268	526 529	529	529	530	530	530	531	છા	531	532	532	532	533	533	533	534	534	534	535	535	535	536	536	536	1	537	537	537	538	238

Annotation	Pol protein	Kelch motif containing protein	dJ383J4.1 (A Kelch motif-containing protein)	Unknown (protein for MGC:28950)	KIAA1298 protein	NSSH-1L	SI-HSSH-1S	data source:SPTR, source key:Q00277, evidence:ISS-putative-related to	GLUTATHIONE PEROXIDASE (EC 1.11.1.9) (GPX)	RIKEN cDNA 2310016C16 gene	unnamed profein product	Plenty of SH3s; POSH	unnamed protein product	KiAA1494 protein	eucine-rich glioma-inactivated 1 protein precursor	eucine-rich, glioma inactivated 1	eucine-rich glioma-Inactivated protein precursor	oaracellin-1	claudin-16	paracellin-1	unnamed profein product	zinc finger protein HIT-4	dJ54820.4 (novel KRAB box containing C2H2 type zinc finger protein)	sirtuin type 1	SiRZalpha protein	Sir2alpha protein	RPB5 meidating protein	unnamed protein product	unnamed protein product	unnamed protein product	data source:SPTR, source key:Q9VS60, evidence: ISS-putative~related to	CG8576 PROTEIN
Ð	<u>S</u>	<u>8</u>	ਰੋ	5	₹ ¥	ठ्य	ठ्य	b	ฐ	X X	S	뮵	S	X X	<u> </u>	<u>e</u>	<u>@</u>	Ö	뭉	ğ	5	ziz	ğ	SiT	SS	Siz	8	ב	5	ב	g	ပ္ပ
GI Number Probability Score	9.00E-29	0	0	0	0	0	1.00E-179	2.00E-69		3.00E-69	1.00E-45	0	0	0	1.00E-136	1.00E-136	1.00E-136	1.00E-150	1.00E-131	1.00E-130	1.00E-137	4.00E-67	3.00E-44	0	0	0	0	0	0	1.00E-127	1.00E-121	
GI Number P	g18076262	g4650844	g12314036	g18044145	g7242951	g18376659	g18376661	g12844142		g18044310	g14042546	g3002588	g10432612	g7959249	g9309467	g18490910	g4091819	g5410527	g5545337	g13926043	g16553391	g12483900	g14456631	g7555471	g11596121	g6693711	g3970833	g17382188	29997097	g16553765	912839186	
Stop	620	2023	2023	2023	2459	2459	2459	489		489	489	2934	2934	2934	2198	2198	2198	978	978	876	9	665	6 65	2323	2323	2323	1580	1580	1580	829	829	
	279	74	74	74	246	246	246	_		_	_	265	265	265	498	498	498	205	205	205	က	က	ო	7	8	8	က	က	က	0	7	,
ength	114	650	920	6 50	738	738	738	છ		163	<u> </u>	830	8	830	267	292	292	258	258	258	22	22	122	774	774	774	526	526	526	276	276	
Frame Length	က	7	7	7	က	က	က	_		_	-	_	_	_	က	က	က	_	_	_	က	က	က	7	7	7	က	က	က	7	7	
SEQ ID NO:	538	539	539	539	540	540	540	<u>5</u>		2	22	542	542	545	543	543	543	5 4	5 4	54 4	545	545	5 <u>4</u> 5	5 <u>4</u> 6	546	5 <u>4</u> 5	547	54	73	548 848	548	

F53B1.2 gene product	cisplatin resistance-associated overexpressed protein	Unknown (protein for MGC:7100)	hypothetical protein	KIAA1798 protein	I(3)mbt protein homolog	hypothetical protein MGC 10500	RIKEN cDNA 0610043B10 gene	data source:SPTR, source key:Q9ESC7, evidence:ISS~putative~similar to	MDGL-1	nuclear antigen H731-like protein	apoptosis-inducible	TIS .	Similar to hypothetical protein DKFZp434G2226	kinesin-like protein	kinesin-like protein Klp5	myosin IIIB	unnamed protein product	myosin heavy chain FM3A	BC39498_1	KIAA1473 protein	Unknown (protein for MGC:23189)	unnamed protein product	zinc finger protein ZNF135	zinc finger protein	unnamed protein product	zinc finger protein EZNF	HKLI	unnamed protein product	data source:SPTR, source key:P93647, evidence:ISS-putative-related to	MITOCHONDRIAL LON PROTEASE HOMOLOG 1 PRECURSOR (EC 3.4.21)
3 Number Probability Score g1072250 5.00E-28	6.00E-85	5.00E-79	1.00E-133	1.00E-88	2.00E-84	2.00E-68	2.00E-68	2.00E-68		0	ó	0	4.00E-87	1.00E-86	1.00E-86	1.00E-170	1.00E-169	1.00E-122	1.00E-158	1.00E-157	1.00E-151	0	1.00E-138	1.00E-138	0	0		0	0	
GI Number Pi g1072250	g6899846	g14318590	g16041142	g14017813	g3811111	g14318767	g13477109	g12833998		g2343085	g1384078	g3426155	g16359265	g2239242	g16151809	g18033747	g16550592	g10440888	g4235144	g7959207	g16041769	g16549180	g488555	g5441615	g16553661	94164083	g2970038	g14042513	g12836332	
Stop 829 757	757	757	1383	1383	1383	5 46	546	5 8		168	1681	1681	1916	1916						1327	1327	1979	1979	1979	2002	2092	2032	1496	1496	
Start 2 164	<u> 3</u>	<u>\$</u>	8	8	8	-	_	_		269	269	269	108	108	108	က	က	က	101	<u>.</u>	<u></u>	366	366	366	5 04	50	50	198	198	
Length 276 198	8	198	246	246	246	182	182	182		471	471	471	603	603	6 03	306	306	306	404	409	404	527	527	527	628	628	628	433	433	
Frame 2	1 7	7	-	-	_	-	_	_		7	7	7	က	က	က	က	က	က	7	7	7	က	က	က	7	7	7	က	က	
SEQ ID NO: 548 549	\$49	549	220	220	5 50	551	551	551		552	552	552	553	553	553	554	554	554 4	555	555	555	556	229	556	557	227	557	558	558	

Annotation Unnamed protein product	Unknown (protein for MGC:5621) unnamed protein product	Similar to DKFZP586B1621 protein	superoxide dismutase-4AP	superoxide dismutase 4A	superoxide dismutase-4A	Similar to RIKEN cDNA 1500017E18 gene	data source:SPTR, source key:Q16775, evidence:ISS~homolog to	HYDROXYACYLGLUTATHIONE HYDROLASE (EC 3.1.2.6) (GLYOXALASE II)	I)~putative	similar to HAGH	P2	KIAA1099 protein	centaurin gamma2	Jnknown (protein for MGC:15400)	unnamed protein product	unnamed profein product	unnamed profein product	unnamed profein product	zinc finger protein	unnamed protein product	unnamed protein product	zinc finger protein (ZFD25)	Jnknown (protein for IMAGE:3352566)	unnamed protein product	dJ153G14.3 (novel C2H2 type Zinc Finger protein)	unnamed protein product	Jnknown (protein for MGC:8872)	Similar to zinc finger protein 113	beta-3-galactosyltransferase	beta-1,3-N-acetylglucosaminyltransferase 1
Θ : G	\$ 5	SE	gns	dns	dns	SIT	g	¥	=	simi	MRIP2	ΧĀ	CeC	ᅙ	ב	5	5	ב	zinc	5	S	zinc	S	בביבו	ਰ	5	S	Sim	bet	bet
GI Number Probability Score g16508614 0 u	3.00E-61	3.00E-56	1.00E-85	2.00E-83	2.00E-83	1.00E-165	1.00E-133			1.00E-124	1.00E-148	1.00E-136	1.00E-136	Ò	0	0	1.00E-114	2.00E-81	2.00E-79	3.00E-91	2.00E-84	3.00E-77	1.00E-29	2.00E-29	2.00E-29	7.00E-55	1.00E-35	1.00E-35	3.00E-56	2.00E-54
GI Number I	g1205498/ g10435998	g18314540	g6018682	g1885354	g6018746	g13279311	g12837716			g14336718	915866260	95689535	g15625584	g14602654	g18128747	g18128749	g16552172	g16552245	g498721	g16550881	g10435738	96088100	g12652727	97020166	g5679450	g16553223	g15488954	g15080235	g16973457	g14290592
Stop 1496	702	1702	557	227	557	1153	1153																						88	
Start 198	3 8	8	\$	8	8	5	<u>ار</u>			<u>6</u>	8	8	0	8	8	45	က	က	က	22	22	22	က	က	ო	က	က	က	12	2
ength 433	<u> </u>	201	153	153	153	321	321			321	260	260	260	340	340	340	187	187	187	185	185	185	88	88	88	209	200	5 00	298	298
Frame Length	. 0	8	က	က	က	7	7			7	7	7	7	က	က	က	က	က	က	<u>.</u>	_		က	က	က	က	က	က	က	ო
SEQ ID NO: 558	26 26 26	559	290	260	260	561	561			2	2 95	2 95	295	563	563	563	5 64	5 64	564	565	265	2 65	900	200	200	267	267	292	2 08	268

Annotation beta-1,3-N-acetylglucosaminyltransferase Unknown (protein for MGC:32065)	sortling nexin 18		Similar to zinc finger protein 296	zinc finger protein	data source: MGD, source key: MGI: 1926956, evidence: ISS-putative-zinc	finger protein 296	HLA-E class I protein precursor	Class Ib gene, CD94/NKG2 ligand	Jnknown (protein for IMAGE:3622619)	klaney-specific protein	unnamed protein product	xenobiotic/medium-chain fatty acid:CoA ligase form XL-111	unnamed protein product	hypothetical protein	cysteine-rich protease inhibitor	riosephosphate Isomerase	riosephosphate isomerase 1	riosephosphate Isomerase	unnamed protein product	Jnknown (protein for MGC:20504)	dJ734P14.5 (novel C2H2 type zinc finger protein)	lbosomal protein \$2	put. LLRep3 protein (AA 1-221)	ilbosomal protein \$2	PQBP-1 protein	nuclear protein containing a WW domain (Npw38)		cathepsin B	ysosomal proteinase cathepsin B	cathepsin B
	sortin	SNAGI	Similo	zinc f	data	finge	Ę	Class	Unkn	kidne		xeno	unna	hypo	cyste	triose	triose	triose		Cukr	dJ734	ribosc	put. L	ribosc	POBP	nucle	JM26	cathe	lysosc	cathe
GI Number Probability Score g15421160 2.00E-54 g17511850 1.00E-170	2.00E-88	2.00E-74	0	1.00E-134	1.00E-134		1.00E-116	1.00E-116	1.00E-116	0	0	0	0	1.00E-126	8.00E-21	1.00E-143	1.00E-143	1.00E-128	4.00E-19	9.00E-16	9.00E-16	4.00E-49	4.00E-49	4.00E-49	3.00E-88	3.00E-88	3.00E-88	3.00E-58	3.00E-58	3.00E-58
GI Number P g15421160 g17511850	g15042691	g15559064	g17939572	g11602755	g12843135		g306852	g15277235	g1327915			g5070357	_	_					g1404268		g1316004	g553841						g291888		g16307393
Stop 905 2263	2263	2263	1085	1085	1085		8	ģ	ģ	1624	1624	1624	1253	1253	1253	847	847	847	2285	2285	2285	<u> </u>	<u>%</u>	<u>%</u>	702	702	202	4	46	46
Start 12 1025	1025	1025	က	က	ന		23	55	22		8	8	7	14	7	8	8	8	12%	12%	1296	1250	1250	1250	2	2	8	23	22	27
ength 298 413	413	413	361	361	361		295	295	295	2	<u>2</u>	2	371	371	371	282	282	282	330	330	330	139	139	139	213	213	213	145	145	145
Frame Length 3 298 2 413	8	7	က	က	က		-	_	_	7	7	7	က	က	က	7	7	7	က	က	က	7	8	7	_	_	_	က	က	က
Ö	569	999	220	920	570		571	ל2	129	572	572	572	573	573	573	574	574	574	575	575	575	576	. 576	576	277	277	277	578	578	578

							g to SIGNAL)																					_			
Annotation							MTR7, evidence: ISS-homola	ΘΛ		hoit												111)	•					at protein GRWD	F091072.1) predicted proteir	•		
4	ribosomal protein S7	Ribosomal protein S7	40S ribosome protein S7	unnamed protein product	unnamed protein product	unnamed protein product	data source:SPTR, source key:Q9WTR7, evidence: ISS-homolog to SIGNAL	PEPTIDASE 21 KDA SUBUNIT~putative	Unknown (protein for MGC:9299)	microsomal signal peptidase subunit	brain link protein-1	brain link protein-1	brain link protein-1	unnamed protein product	hypothetical protein FLJ12707	unnamed protein product	R31155_1	KIAA1431 protein	unnamed protein product	hypothetical protein SB146	unnamed protein product	Unknown (protein for IMAGE:3942111)	WAC	unnamed protein product	hypothetical protein PRO1741	glutamate rich WD repeat protein	Similar to CG12792 gene product	Similar to glutamate rich WD repeat protein GRWD	hypothetical protein, similar to (AF091072.1) predicted protein	unnamed protein product	Unknown (protein for MGC:14981)	F23269_2
Probability Score	7.00E-97	5.00E-94	1.00E-82	2.00E-77	2.00E-49	3.00E-27	2.00E-90		3.00E-90	3.00E-90	0	0	0	0	0	0	1.00E-59	1.00E-21	4.00E-21	0	0	1.00E-172		0	0			1.00E-159	0	0	0	0
_	g4588906	g14787424	g4128206	g16553223	g16550444	g16551429	g12841311		g16307229	g13182747	g11094293	g11094311	g11094297	g10434596	g15929209	g10434367	g6249687	g7243243	g16550359	g14585869	g14042915	g14328009	g14915787	g16550684	g13279044	g13274611	g12803253	g14198122	g9187612	g10436076	g14602971	g3540177
Stop	65	65	65	638	638	638	1402		1402	1402	1415	1415	1415	1749	1749	1749	573	573	573	1445	1445	1445	2134	2134	2134	861	86 [861	1702	1702	1702	1268
Start		_	_	က	က	က	833		833	833	387	387	387	247	247	247	217	217	217	જ	જ	జి	419	419	419	_	_	_	248	248	248	23
Length	217	217	217	212	212	212	8		<u>8</u>	8	343	343	343	50	501	8	119	119	119	461	461	461	572	572	572	287	287	287	485	485	485	405
Frame Length	_	_	_	რ	ო	က	7		7	7	က	က	က	_	_	_	_	_	_	က	က	က	8	7	7	_	_	_	7	7	7	က
SEQ ID NO:		579	579	580	580	280	581		581	581	582	582	582	583	583	583	584	584	584	586	586	28 6	587	287	587	588	588	588	589	589	589	260

Annotation	BC331191_1	data source:SPTR, source key:P16374, evidence:ISS~putative~similar to ZINC	HINGER PROTEIN 60 (ZFP-60) (ZINC FINGER PROTEIN MFG-3)	KIAA1473 protein	Unknown (protein for MGC:23189)	BC39498_1	hypothetical protein	Kruppel-type zinc finger protein	gonadotropin inducible transcription repressor-4	autoimmune enteropathy-related antigen AIE-75	antigen NY-CO-38	Similar to PDZ-73 protein	Als2	long form	KIAA1563 protein	Unknown gene product	unnamed protein product	Unknown (protein for MGC:20208)	unnamed protein product	KIAA1431 profein	R31665_2	unnamed protein product	Similar to KiAA0961 protein	unnamed protein product	Unknown (protein for MGC:2615)	unnamed protein product	unnamed protein product	target of myb1-like protein 2	dJ510H16.1 (target of myb1 (chicken) homolog)	IONI	hypothetical protein	hypothetical protein
obability Score	1.00E-174	1.00E-111		7.00E-50	2.00E-48	5.00E-47	0	0	0	0	0	0	4.00E-79	8.00E-79	8.00E-79	0	0	5.00E-98	7.00E-40	1.00E-31	2.00E-29	1.00E-108	1.00E-108	3,00E-95	0	0	0	1.00E-167	1.00E-121	1.00E-121	1.00E-117	5.00E-91
GI Number Pr	g5080758	g12855931		g7959207	g16041769	94235144	g12052983	g4519270	g6467206	g5231271	g3170200	916359185	g15823640	g15823636	g10047191	g3417297	g16552168	g15559282	g16550359	g7243243	g4567178	g14042550	g13937909	g16552245	g12804493	918128717	g16549529	g18652252	93256185	93319953	g13676443	g6808105
Stop	1268	1268		517	517	517	2185	2185	2185	1749	1749	1749	1126	1126	1126	5	<u>8</u>	<u>\$</u>	424	424	424	1249	1249	1249	1442	1442	1442	3 88	1055	1055	1605	1605
S	2	3	,	8	7	0	8	7	8	_	_	_	0	7	8	9	18	18	143	143	143	8	8	8	42	42	45	က	က	က	_	_
ength	405	405	!	172	172	172	728	728	728	583	583	583	375	375	375	349	349	349	4	44	94	390	360	390	467	467	467	351	351	351	535	535
Fo	က	က	(7	7	7	7	7	7	_	_	_	7	7	7	က	က	က	7	7	2	7	N	7	က	က	က	က	က	က	_	-
SEQ ID NO:	200	200	į	591	591	5 61	592	592	265	593	593	593	594	594	594	595	595	595	296	296	296	265	262	262	598	598	598	669	266	599	99	8

Annotation	RGL1	bA255A11.3 (novel protein similar to KIAA1074)	bA526D8.2 (novel protein similar to KIAA1074)	hypothetical protein	unnamed protein product	unnamed protein product	EZFIT-related protein 1	CUB and sushi multiple domains 1 protein	CUB and sushi multiple domains protein 1 short form	KIAA1890 protein	JBX domain-containing protein 1	JBX domain-containing protein 1	JBX domain-containing 2	unnamed protein product	KIAA0412	KIAA0412	pol protein	Gag-Pro-Pol protein	polymerase	D-E-A-D box protein	unknown	Dbp73D gene product	bA526D8.2 (novel protein similar to KIAA 1074)	bA255A11.3 (novel protein similar to KIAA1074)	hypothetical protein	Ank repeat containing protein~data source:Pfam, source key;PF0	evidence:ISS~putative	CG13320 gene product	f gene product	NUANCE	NUANCE-N-33	NUANCE
GI Number Probability Score	4.00E-86	4.00E-74	1.00E-73	3.00E-56	0	42	1.00E-120	9.00E-95 (9.00E-95	9.00E-95	0	_	0	2.00E-41	2.00E-24	2.00E-24	5.00E-73	7.00E-72 (7.00E-72	1.00E-75	1.00E-75	1.00E-75	1.005-151	1.00E-134 L	3.00E-96	1.00E-166		•			_	2.00E-59 N
GI Number P	918146831	g12314195	g12314164	g12053099	g16550359	g16550064	g13560888	g14794726	914787181	g15620839	g13160492	g13160494	g14249831	g16549907	g2887445	93289985	94185943	95802821	g4456990	g499204	g4972732	g7294064	g12314164	g12314195	g12053099	g12842288		g7303380	g7293339	g17016967	g17016965	917016969
Stop	1605	785	785	785	1291	1291	1291	615	615.	615	1454	1454	1454	356	356	356	926	926	926	1892	1892	1892	1559	1559	1559	1128		1128	1128	969	268	208
																											:					
ength.	535	<u>18</u> 4	184	184	387	387	387	195	195	195	484	484	484	118	118	118	158	158	158	630	830	630	268	268	268	372		3/2	372	132	132	132
Frame (_	ო	က	က	7	7	7	_	_	_	က	ო	ო	က	က	က	က	က	က	က	ო	က	က	က	က	_		1	_	7	7	8
SEQ ID NO:																																

Appropriation	KIAA0356 protein	unnamed profein product	hypothetical protein KIAA0356	Human alpha-adaptin A homolog	alpha-adaptin A related protein	alpha-adaptin (A) (AA 1-977)	unnamed protein product	BTB/POZ domain zinc finger factor HOF-L	hypothetical protein	Similar to mitotic control protein dis3 homolog	Unknown (protein for IMAGE:4561365)	KIAA1008 protein	archease	data source:SPTR, source key:Q9VD92, evidence:ISS~putative~related to	CG6353 PROTEIN	data source:SPTR, source key:Q9VD92, evidence:ISS~putative~related to	CG6353 PROTEIN	R27945_1	unnamed protein product	KIAA0412	C358B7.1 (ublquitin-conjugating enzyme E2I (homologous to veast UBC9))	ubiquitin-conjugating enzyme UbcE2A	ubiquitin-conjugating enzyme, UBC9	kelch-like protein KLHL6	Unknown (protein for MGC:28950)	dJ383J4.1 (A Kelch motif-containing protein)	hemicentin	unnamed protein product	bG153O3.1 (similar to C.elegans hemicentin precursor)	unnamed protein product	Unknown (protein for MGC:2663)	KIAA1473 protein
Probability Score	0	0	1.00E-172	1.00E-103	1.00E-103	4.00E-95	0	6.00E-41	6.00E-41	0	0	1.00E-154	3.00E-34	3.00E-34		3.00E-34		0	1.00E-144	1.00E-138	1.00E-43	1.00E-43	1.00E-43	1.00E-173	7.00E-50	7.00E-50	0	0	1.00E-170	1.00E-117	2.00E-50	2.00E-46
GI Number P		g7899288	99367856	g4314340	g15963476	g49878	g14042035	g6063139	g4886505	g18314381	g15555519	g17225572	918650590	g12841926		g12840887		g2689446	g16549907	g3289985	g5262325	g4079643	g2597931	g17105197	g18044145	g12314036	g14575679	916551710	g11544425	g7019945	g12804721	g7959207
Stop	2458	2458	2458	725	725	725	2222	2222	2222	2917	2917	2917	482	482		482		1419	1419	1419	3283	3283	3283	786	487	687	1212	1212	1212	<u>8</u>	1001	<u>8</u>
Start		88	8 8	છ	93	છ	762	762	762	7	7	7	183	183		183		<u>8</u>	9	9	2870	2870	2870	_	_	_	73	73	73	366	366	366
enath	617	617	617	211	211	211	487	487	487	972	972	972	8	8		8		438	438	438	138	138	138	329	329	329	380	380	380	232	232	232
Frame Length	2	8	0	ო	က	က	က	က	ო	7	7	7	က	က		က			_	_	7	7	0	_	_	_	_	_	_	က	က	က
SEQ ID NO: F		613	613	614	614	614	615	615	. 615	919	616	919	617	617		617		618	618	618	619	619	619	620	920	620	621	621	621	622	622	622

Annotation	QM protein	WO	Wilm's tumor-related protein	KIAA1285 protein	zinc finger DNA binding protein p71	similar to HUB1; similar to BAA24380 (PID:q2789430)	unknown	INFAIP1-IIke profein	polymerase delta-interacting protein 1	Similar to ATPase, H+ transporting, lysosomal (vacuolar proton pump)	Unknown (protein for MGC:20253)	vacuolar proton-ATPase	protein B		Unknown (protein for MGC:12569)	unnamed protein product	DiGeorge syndrome-related protein FKSG4	unknown	Unknown (protein for MGC:15677)	LD37206p	CG6144 gene product	CG7616 gene product	data source:SPTR, source key:Q9UIE6, evidence:ISS~homolog to	HYPOTHETICAL 52.0 KDA PROTEIN~putative	RIKEN cDNA 2610005A10 gene	NALP4	unnamed protein product	unnamed protein product	Unknown (protein for MGC:19357)	unnamed protein product	sodium iodide symporter	vacuolar adenoslne triphosphatase subunit D
COTO	4.00E-34 6	4.00E-34 (4.00E-34 V		.00E-108 z	00E-106 s	1.00E-148 L	•	1.00E-145 p	.00E-161 S	.00E-153	4.00E-93 v	.00E-137 p			6.00E-75		2.00E-56	2.00E-95	2.00E-52 L			2.00E-30 c	_	2.00E-30 R	1.00E-80 N		6.00E-20	0	1.00E-173 u	1.00E-151 s	2.00E-75 v
er Prob	_				•	_	S S	28	ð.	Z	ר וכ		2									-							5		-	
GI Number I	g40746	g402827	180616	g633137	g1861400	9563008	g180273	g1507240	g1615204	g132778k	g150824	g37643	g120874	g120050	g1687800	g1654938	g158244	g309401	g140432	g1607687	g729771	g729474	g128473£		g1471478	g1706417	g1655216	g1790163	g1738927	g1520971	g370226	93955100
Stop				_																												
Start	115	115	115	37	37	37	က	က	က	7	7	7	Ξ	Ξ	Ξ	1377	1377	1377	_	_	_	879	879		879	6	6	5	_	_	_	႙
Length	136	136	136	838	838	838	255	255	255	327	327	327	2 6	264	264	163	163	163	262	262	262	323	323		323	175	175	175	26	28	561	276
Frame	_	_	_	_	_	_	က	က	က	7	7	7	7	7	7	က	က	က		_	_	က	က		က	,	_		_	_	_	က
SEQ ID NO:	623	623	623	624	624	624	625	625	625	626	929	979	627	627	627	628	628	628	629	629	629	630	630		630	632	632	632	633	633	633	634

Annotation	Unknown (protein for MGC:18332)	Unknown (protein for MGC:15351)	vascular endothelial growth factor	vascular permeability factor precursor	vascular endothelial growth factor	unnamed protein product	serine/threonine protein kinase	CG7236 gene product	aquaporin 3	aquaporin 3	aquaporin-3; AQP3	unnamed protein product	zinc finger protein	zinc finger protein ZNF135	BC331191_1	kruppel-related zinc finger protein	b3418.1 (zinc finger protein 184 (Kruppel-like))	Similar to zinc finger protein 97	unnamed protein product	epstein-barr virus-Induced zinc finger protein	KiAA1141 protein	Unknown (protein for MGC:20009)	zinc finger protein ZFP100	Similar to hypothetical protein MGC10520	unnamed protein product	zinc finger protein ZNF135	CR1 precursor protein	complement receptor 1	complement receptor 1	metalloprotease/disintegrin/cysteine-rich protein precursor	KIAA0021 protein	metalloprotease/disintegrin/cysteine rich protein precursor
GI Number Probability Score	2.00E-75		1.00E-137	1.00E-133	1.00E-133	1.00E-101	1.00E-82	8.00E-72	1.00E-172	1.00E-172	1.00E-164	1.00E-102	1.00E-101	1.00E-99	0	0	0	3.00E-17		3.00E-13	0	0	0	1.00E-163	J.00E-110	1.00E-107 2	0	0	0	0	0	0
GI Number Pr	g15029719	g14250784	g3712671	g340301	g340215	g17045994	g36615	g7297009	g15488871	g1854374	g4416299	916549180	95441615	g488555	g5080758	g1769491	g3135968	g12805201	g14042682	g5453423	g6329952	g17391340	917981470	g15489325	g16549189	g488555	g30186	9306680	g557725	g1235672	96630618	g1235676
Stop	857	857	1683	1683	1683	1279	1279	1279	923	923	233	1496	1496	1496	2259	2259	2259	629	659	659	2874	2874	2874	1172	1172	1172	6147	6147	6147	2540	2540	2540
Start	ဓ	ဓ	490	490	8	689	689	6 8 9	က	က	က	708	708	708	241	241	241	8	8	8	8	34	g	3]8	318	318	9	92	9	8	8	8
Length		276	398	398	398	197	197	197	307	307	307	263	263	263	673	673	673	198	198	198	947	947	947	285	285	285	204 4	2044	2044	827	827	827
Frame		က	_		_	8	7	7										က				_	_	က	ო	က	_	_	_	က	က	က
SEQ ID NO:	634	634	635	635	635	636	636	636	637	637	637	638	638	638	639	639	639	8	3	8	2	<u>8</u>	2	642	642	64 2	64 3	643	8	2	44	4

Annotation	unnamed protein product	HM74	putative seven transmembrane spanning receptor	zinc finger protein homologous to mouse 2fp91	FKSG11	zinc finger protein PZF	carbonic anhydrase III, muscle specific	carbonic anhydrase III	carbonic anhydrase 3	u-PA receptor	UPAR_HUMAN; GPI-ANCHORED FORM PRECURSOR; U-PAR; MONOCYTE	ACTIVATION ANTIGEN MO3; CD87 ANTIGEN	urokinase plasminogen activator receptor	organic anion transporter OATP-B	KIAA0880 protein	organic anion transporter polypeptide-related protein 2	tropomyosin 5	tropomyosin	tropomyosin Isoform 6	hypothetical protein	non-lens beta gamma-crystallin like protein	hypothetical protein	Interferon regulatory factor-2 (AA 1-349)	interferon regulatory factor 2	unnamed profelin product	unnamed protein product	Smad2	MAD-related protein Smad2	lkaros/LyF-1 homoloa	FIK1	lkaros transcription factor	KIAA0463 protein
GI Number Probability Score	0	6.00E-57	8.00E-57	1.00E-157	1.00E-157	1.00E-154	1.00E-152	1.00E-152	1.00E-140	0	0		0	0	0	0	2.00E-43	2.00E-43	2.00E-43	0	1.00E-70	1.00E-65	1.00E-124	1.00E-124	1.00E-116	0	0	0	0	0	0	0
GI Number P	g14134965	g219867	g]1558406	g15277259	g15865601	9453376	913436164	9179789	g15029812	g512464	g4335703		937605	95006263	g4240249	g11990589	g54912	g438878	g312928	913365855	g2072425	g15207879	g33967	g16041826	9000099	g6733355	g2967646	g2695663	g1289371	g1911483	g2330595	g3413888
Stop	1954	1954	1954	8	28	8	1623	1623	1623	1077	1077		1077	2413	2413	2413	1187	1187	1187	1306	1306	1306	12%	12%	1290	1692	1692	1692	1795	1795	1795	6384
•	821	821	821	7	8	7	856	856	856	-	~		_	233	233	233	8	8	606	185	185	185	592	592	592	_	_	-	5 80	5 8	299	48]
Length	378	378	378	263	263	263	256	256	256	359	326		326	727	727	727	93	83	93	374	374	374	233	233	233	5 6	56	56	499	499	499	1968
Frame 1	7	7	7	7	0	7	_	<u>-</u> -	_	-			_	7	8	7	က	က	က	7	7	7	_	,_	_	_	_	_	7	0	7	_
SEQ ID NO: Frame Length	\$	645	\$	8 46	8 48	646 646	4	44	42	648	848		648	649	\$	849	6 50	6 50	6 50	651	651	651	652	652	652	653	653	653	559	654	6 54	655

Annotation		OCT/plexin-A2 protein	olfactory receptor MOR138-2	olfactory receptor	olfactory receptor MOR138-1	myocyte-specific enhancer factor 2A, C4 form	myocyte-specific enhancer factor 2 (MEF2)	serum response factor-related protein	protocadherin-beta12	protocadherin beta 12	protocadherin beta 11	put. HBK2 protein (AA 1-529)	put. RCK2 protein (AA 1-530)	murine potassium channel protein	ESTs D15590(C0900),D48950(S15542),D22684(C0900) correspond to a re	of the predicted gene.~Similar to Arabidopsis thaliana 60S ribosomal	protein L11A (L16A). (P42795)	ibosomal protein L11-like	AT4g18730/F28A21_140	CaMKK beta 1 isoform	CaMKK beta 1 isoform	calcium/calmodulin-dependent protein kingse kingse b2	zinc finger protein	dJ148M19.1 (zinc finger protein)	AP-2rep protein	NMDAR1 subunit isoform 4b	NMDAR1 subunit isoform 3b	NMDA receptor subunit, type NMDAR1-LL	translation initiation factor 5A	translation initiation factor 5A	ranslation initiation factor 5A	unnamed protein product
Ф	plexin 2	Ö.	olfac	olfac	olfac	ο λ	O E	serur	prote	prote	prot	put.	put.	muri	ESTS	of #	profe	ribos	AT4g	Cal	S	calci	zinc	d J14	AP-2	N N N	NMD	NMD	trans	trans	trans	ouun
Probability Score	0	0	1.00E-152	1.00E-123	1.00E-106	0	0	0	0	0	0	0	0	0	g7340874 2.00E-96 E			1.00E-94	1.00E-94	1.00E-173	1.00E-173	1.00E-173	0	1.00E-168	2.00E-78 ·	0	0	0	2.00E-89	2.00E-89	2.00E-83	1.00E-154
GI Number F	g1655432	g6010215	g18480242	g15293713	g18480166	g1197538	g34536	9432656	g14009457	g5457031	g5457029	932033	g57667	g199893	g7340874			g7630065	g14517470	g17225038	g17225036	g14522878	g4096339 [°]	g6691968	g5457352	g2343289	g2343287	g56765	g2668738	g1546919	g3789948	g14139788
Stop	6384	6384	1420	1420	1420	1737	1737	1737	2638	2638	2638	2458	2458	2458	အ					1304												
		481																7	7	ઝુ	36	38	663	663	663	က	က	က	7	7	7	8
ength.	1968	1968	321	321	321	415	415	415	578	578	578	449	449	449	206			50 6	%	423	423	423	44 6	446	44 6	842	842	842	<u>18</u>	184	184	267
Frame L	_	1 1968	7	7	7	-	_	_	7	7	7	7	7	7	7			7	7	ო	က	က	က	က	က	က	က	က	7	0	7	က
SEQ ID NO:		655																99	099	8	[96]	8	662	662		663	663	663	8	%	%	992

Annotation unnamed protein product hypothetical protein	Similar to RiKEN cDNA 2310035M22 gene	data source:SPTR, source key:P24390, evidence:ISS~homolog to ER LUMEN PROTEIN RETAINING RECEPTOR 1 (KIDEL RECEPTOR 1), motivo	data source:SPTR, source key:O60858, evidence:ISS~homolog to LEUKEMIA	ASSOCIATED PROTEIN 5 (B-CELL CHRONIC LYMPHOCYTIC LEUKEMIA TUMOR	SUPPRESSOR LEU5)~putative	alpha 1 A-voltage-dependent calcium channel	alpha 1 A-voltage-dependent calcium channel	alpha 1 A-voltage-sensitive calcium channel	data source:SPTR, source key:P37545, evidence:ISS~putative~related to	HYPOTHETICAL 29.2 KDA PROTEIN IN METS-KSGA INTERGENIC REGION	similar to hypothetical proteins	nknown	unnamed protein product	CECR1 protein	CECRI	Unknown (protein for IMAGE:3877337)	hypothetical protein	evidence:NAS~hypothetical protein~putative	unnamed protein product	KIAA1479 protein	unnamed protein product	KIAA0961 protein	hypothetical protein	zinc finger protein 30	hypothetical protein	nesprin-2 beta	NUANCE	unnamed protein product	fibroblast growth factor receptor 5
	SES	g da	g	ASS	S	뮵	ᄝ	<u>a</u>	g	¥	simi	Š	S	<u>Я</u>	₩ H	Ş	ξ	: <u>⊖</u>	S	₹	S	₹	hyp	zinc	d d	nes	N	S	fibro
ability Scor 1.00E-154 1.00E-154	.00E-119	.00E-114	1.00E-111			1.00E-111	.00E-111	.00E-111	1.00E-64		5.00E-13	5.00E-13	.00E-158	.00E-151	.00E-116	0	1.00E-157	8.00E-96	0	0	0	0	0	0	0	0	0	0	0
70bat 1.0 1.0	0.	0.	0.0			0.	0.	0.	<u>~</u>		5.0	5.0	<u> </u>	0.	<u> </u>		Ö.	8											
GI Number Probability Score g12405805 1.00E-154 g6453491 1.00E-154	g13879442	g12855490	g12848905			g1763638	g1763636	g1763632	g12837586	i	g2632306	g467428	g14042544	g7650202	g17646182	g16307285	g15208051	g12855904	g10434329	g14133251	g10434456	g4589566	g13676461	g456269	g5262574	g17861380	917016967	g17049366	g13447749
Stop (1703)			868					823			667	799		198				1808									429 C		
Start S 903 1 903 1			S					128			506			_											155	_	_	_	_
		88	298					. 232																	425 1				
Frame Length 3 267 3 267	2	8	7			8	8	7			_		Ñ	Ñ	Ŕ	Ŋ	Ŋ	Ŋ	4	4	4	4	4	4	4	4	4	2	ഗ
	7	α,	7			8	7	7	7		8	7	_	_	_	က	က	က	_	_	_	က	ന	က	7	7	7	က	က
SEQ ID NO: 665 665	999	99	99			667	2 90	667	899		899	899	699	699	699	670	670	670	67ا	67ا	671	672	672	672	673	673	673	674	674

		FGFR-like protein	KIAA1473 protein	zinc finger protein	unnamed protein product	Unknown (protein for MGC:15514)	hypothetical protein	Unknown (protein for MGC:8872)	hypothetical protein FLJ20481	unnamed protein product	EF hand containing protein~data source:Pfam, source key:PF00036,	evidence:ISS~putative	CUB and sushi multiple domains 1 protein	CSMD1	KIAA1884 protein	unnamed profein product	dJ402H5.2 (novel protein similar to worm and fly proteins)	CG11212 gene product	protein Inhibitor of activated STAT protein PIASx-beta	Unknown (protein for MGC:11445)	protein inhibitor of activated STAT protein PIASx-alpha	BTB/POZ domain containing protein-data source:Pfam, source	key:PF00651, evidence:ISS~putátive	RIKEN cDNA 4930429H24 gene	unnamed protein product	unknown	hypothetical protein	TPR Domain containing protein~data source:Pfam, source key:PF00515,	evidence:iS>~purgrive	DA438823.1 (neuronal leucine-rich repeat protein)	unnamed protein product	Unknown (protein for MGC:17422)	KIAA0137 protein
	Si Number Probability score	0	2.00E-26	4.00E-26	6.00E-26	4.00E-91	4.00E-91	1.00E-89	0	0	0		0	0	1.00E-172	0	5.00E-87	5.00E-27	0	0	0	0		0	0	1.00E-111	1.00E-96	3.00E-91	c)	0 .	1.00E-122	0
	GINUMBER P	g10944887	g7959207	g498736	916551398	913938261	g5262557	g15488954	g12803309	g7020611	g12853070		g14794726	g14787176	g15620827	g16549477	g12214288	g7302178	g3643115	g13542785	g3643113	g12853497		g18204103	g7019911	g18027414	g13358646	g12843142	010300630	0.00406219	g16551759	915027089	g6633952
5	dolo Colo	¥ !	261	591	2 61	1174	1174	1174	1658	1658	1658		<u>4</u>	<u>4</u>	<u>4</u>	1197	1197	1197	1941	194	1941	1260		1260	1260	861	861	198	Š	3 3	\frac{3}{2} \frac{5}{2}	<u>x</u>	2451
	בוקה מוסב	n	3	145	145	134	134	134	က	က	က		_	_	_	4	4	4	103	සු	<u>გ</u>	_		_	_	_	_	_	(6)	3 6	7 5	70	52
4		5 6	149	149	149	347	347	347	552	552	552		488	488	488	398	398	398	613	613	613	420		420	420	287	287	287	ACA ACA	979	824	470	803
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	SECTIONO: FIGHTHE LENGTH	9/0	0/2	675	675	929	929	929	219	219	219		678	678	678	629	679	679	089	989	089	(83		189	681	682	682	682	683	884	007 783	3 3	084

Annotation PKU-beta tousled-like kinase 1 data source:SPTR, source key:Q918M2, evidence:ISS~putative~related to	putative acetyltransferase putative N-acetyltransferase WD domain, G-beta repeat containing protein~data source:Pfam, source	WD domain, G-beta repeat containing protein~data source:Pfam, source key:PF00400, evidence:ISS-putative	bA338L11.1 (novel CUB domain protein similar to attractin)	membrane attractin precursor secreted attractin precursor	olfactory receptor MOR262-10	olfactory receptor olfactory receptor	data source:SPTR, source key:Q9NZ01, evidence:ISS~homolog to SYNAPTIC GLYCOPROTEIN SC2 (UNKNOWN) (PROTEIN FOR MGC:14589) (SIMILAR TO	CG10849 GENE PRODUCT)~putative SC2	RIKEN CDNA A230102P12 gene	C-terminal binding protein 2	Unknown (protein for MGC:13751)	ehequ	dJ29K1.2 (KIAA0426 (C2H2 type zinc finger protein))	KIAA0426	zinc finger protein 96	Unknown (protein for IMAGE:4121355)	pll6Rip	P116RIP
Probability Score 0 0	000	1.00E-107		1.00E-137		1.00E-104		1.00E-150				4.00E-60	0	0	0		0	0
GI Number P g2217933 g6063017 g12836718	g13195460 g14589342 g12856025	g12846941	g10800564	ge 1 8083 g8 1 1 8083	g18480302	g5869927 g8919698	g12846015	g256994	g18044806	g6015476	g15426462	g12034656	g15020827	g2887427	g4097501	g14602998	g1657837	g10803059
Stop 2451 2451 1862	1862 1862 1328	1328	<u> </u>	<u>3</u> <u>2</u>	950	හි හි	795	795	795	1450	1450	1450	1957	1957	1957	3270	3270	3270
Start 25 25 234	234 234 3	თ «	2 2 2	2 2	က	ო ო	-	_	_	905	905	905	119	119	119	337	337	337
ength 809 809 543	\$2 \$4 \$2 \$4	2442	2 2 2	205 205	316	316 316	265	265	265	182	182	182	613	613	613	8/6	978	8/6
Frame L	က က် က	m «) M (າຕ	ကျ	ကက	-	_	_	7	7	0	7	7	7	_	_	-
SEQ ID NO: Frame Length Start 684 1 809 25 684 1 809 25 685 3 543 234	685 685 686	989	687	687 87	889	688 688 889	689	689	689	069 9	069	069 9	691	(69	(6)	692	642	692

Annotation	dJ138B7.3.2 (lethal (3) malignant brain tumor (I(3)mbt) protein (Drosophila)	KIAA0681 protein	dJ138B7.3.1 (continued from dJ862K6.1 in Em:AL031681)	RACK-like protein PRKCBP1	CTCL tumor antigen se 14-3	se14-3r protein	KIAA1311 protein	unnamed protein product	unnamed protein product	GAC-1	unnamed protein product	unnamed protein product	hypothetical protein	fas-associated factor 1	CGI-03 protein	small GTP-binding protein	SAR1 protein	hypothetical protein	KIAA1538 protein	BTB/POZ domain containing protein~data source:Pfam, source	key:PF00651, evidence:ISS~putative	similar to zinc finger 5 protein from Gallus gallus, U51640 (PID:a1399185)	unnamed protein product	data source:SPTR, source key:Q9P2N7, evidence:ISS~homoloa to	HYPOTHETICAL PROTEIN KIAA1309 (FRAGMENT)~putative	KIAA1354 protein	cap-binding profein	Similar to eukaryotic translation initiation factor 4E	translation initiation factor eIF-4E	putative zinc finger protein from EUROIMAGE 566589
GI Number Probability Score	0	0	0	0	0	0	0	1.00E-113	1.00E-112	0	0	0	1.00E-111	1.00E-111	1.00E-111			2.00E-75	1.00E-161	1.00E-87		4.00E-32	1.00E-142	2.00E-53	-		1.00E-130		1.00E-128	4.00E-98
GI Number P	g11323324	g3327176	g11323323	g7960216	g11385648	g17980969	g7242977	g14042145	g14041949	g11596412	g10437204	g7019901	g6599275	g5805208	94680647	g16603814	g13177778	g12052967	g7959343	g12844361		g2085786	g10434090	g12836022		g7243089	g306487	g15214959	g7673694	g13544026
Stop	1615	1615	1615	1910	1910	0161	2665	2665	2665	4033	4033	4033	1048	1048	1048	1431	1431	1431	2195	2195		2195	824	824		824	844	844	\$	632
Start	7	7	8	699	%	699	1157	1157	1157	224	224	224	8	7	8	982	982	982	8	8		204	က	က		က	7	7	7	က
Length	538	538	538	414	414	414	503	503	203	1270	1270	1270	349	349	349	35	<u>당</u>	03	8	8		%	274	274		274	281	281	281	210
Frame	8	8	7	က	က	က	8	7	7	7	8	7	7	7	7	_	_	_	က	က		က	က	က		က	7	7	α	က
SEQ ID NO: Frame Length Start	693	693	663	694	694	694	969	969	969	969	969	969	269	269	269	669	669	669	200	92		9	102	107		102	702	702	. 702	703

Annotation Anypothetical protein, similar to (AF134804) putative zinc finger transcription factor OVO1	unnamed protein product	MTG8-related protein MTG16a	MTG8-related protein MTG16b	ETO/MTG8-related protein ETO-2	hypothetical protein	unnamed protein product	hexaribonucleotide binding protein 2	ATP-binding cassette A9	KIAA0822 protein	ATP-binding cassette A10	MEGF12	Jedi protein	Jedi-736 protein	KIAA0379 protein	hypothetical protein	ankyrin (brank-2)	unnamed protein product	putative RNA-binding protein Q99	KIAA1567 protein	KIAA1386 protein	hypothetical protein	unnamed protein product	Unknown (protein for IMAGE:3611719)	hypothetical protein	Ank repeat containing protein~data source; Pfam, source key: PF00023,	evidence:ISS~putative	KIAA0613 protein	cypherl	oracle 1 protein	BAP2-alpha protein
Probability Score 4.00E-98	2.00E-97	0	0	0	0	0	1.00E-179	0	0	0	0	0	1.00E-116	1.00E-172	1.00E-160	5.00E-48	0	0	0	0	0	0	0	0	1.00E-164		0	0	0	0
GI Number I g5102580	g10433647	g3256264	g3256266	g2723941	g2664429	g16549891	g18461369	g17223624	g4240130	g17223626	g17017251	g17386053	g18252658	g6634025	g6453538	g4803678	g10434450	g6002623	g10047199	g7243153	g6807862	g7022270	g13097657	g8885518	g12854661		g3327040	g11612596	g6969629	g4126475
Stop 632	632	1914	1914	1914	1347	1347	1347	454	4541	454	2256	2256	2256	2075	2075	2075	2845	2845	2845	3646	3646	3646	1405	1405	1405		2214	2214	2214	1696
Start 3	က	4	4	8	92	92	%	2766	2766	2766	274	274	274	252	252	252	266	5 00	5 60	7	8	0	7	7	7		_	_	_	7
ength 210	210	625	625	625	424	424	424	265	592	592	8	6	[9 0	80 8	809	608	860	860	860	1215	1215	1215	468	468	468		738	738	738	265
Frame L 3	က	_	_	_	_	_	-	က	က	က	_	_	_	က	က	က	7	7	2	7	7	7	7	7	7		_	_	_	0
SEQ ID NO: Frame Length Start 703 3 210 3	703	8	704	704	705	705	705	706	706	706	707	707	707	208	708	708	709	402	402	710	710	710	111	711	111		712	212	712	713

Annotation Insulin receptor substrate protein of 53 kDa (a shorter form) Similar to BAI1-associated protein 2	Unknown (protein for IMAGE:3352566) unnamed protein product	BC37295_2 (partial)	testin	TESTIN 3	TESTIN 2	MAIL	MAIL	IL-1 inducible nuclear ankyrin-repeat protein	KIAA1362 protein	unnamed protein product	data source:MGD, source key:MGI:1261419, evidence:ISS~ethanol	decreased 4~putative	unnamed protein product	PUV	envelope protein	uveal autoantigen	uveal autoantigen	C3VS protein	SRrp35	Similar to FUS interacting protein (serine-arginine rich) 2	TLS-associated protein TASR-2	unnamed protein product	data source:SPTR, source key:Q9VS60, evidence:ISS-putative-related	CG8576 PROTEIN	F53B1.2 gene product	hypothetical gene supported by XM_059671	Unknown (protein for IMAGE:3050476)	Unknown (protein for MGC:31975)	glucose-6-phosphatase
GI Number Probability Score 94239984 0 ir g15559320 0 SI	5.00E-44 5.00E-13	1.00E-12	1.00E-117	1.00E-117	1.00E-117	0	1.00E-178	1.00E-173	1.00E-118	1.00E-109	1.00E-108		1.00E-159	1.00E-150	1.00E-150	0	0	0	1.00E-152	1.00E-151	1.00E-63	1.00E-134	1.00E-128		1.00E-31	9.00E-93	1.00E-136	1.00E-136	2.00E-42
Gi Number F g4239984 g15559320	g12652727 g16552245	g4567180	g12655189	g10443903	g10443902	g13516831	g13442951	g13702146	g7243105	g7023688	g12855942		g7020464	9757872	g5802822	g12240161	g12240158	g10944718	g18034491	g18203864	93327976	g16553765	g12839186		g1072250	g18645200	912803351	g18204315	g2352822
Stop 1696 1696	627 627	627	8	665	665	8	8	8	3109	3109	3109												865						
Start 2 2	370 370	370	က	က	က	က	က	က	7	7	7		<u>1</u> 404	1404	1404	_	_	_	0	Ö	7	8	7	•	7	28	8	2	8
Length 565 565	88	8	22	221	221	330	330	330	1036	1036	1036		532	532	532	1373	1373	1373	280	280	280	288	288	6	788	175	385	385	385
Frame L 2 2																		_	7	7	7	7	7				0 0		
SEQ ID NO: 713 713	714 714	714	715	715	715	716	716	716	717	717	717		718	718	718	719	719	719	720	720	720	721	721	Č	12/	/22	723	/23	723

G Annotation	hypothetical protein	KIAA1798 protein	dJ138B7.3.1 (continued from dJ862K6.1 in Em: AL031681)	HSV-1 stimulating-related protein	KIAA0872 protein	Unknown (protein for MGC:15935)	Unknown (protein for MGC:6708)	DNA segment, Chr 10, University of California at Los Angeles 1-data	source:MGD, source key:MGI:88930, evidence:ISS~putative	DNA segment, Chr 10, University of California at Los Angeles 1~data	source:MGD, source key:MGI:88930, evidence:ISS~putative	KIAA1573 protein	hypothetical protein	BG:DS07473.1 gene product	zinc finger protein	dJ265C24.2 (zInc finger protein 192 (LD5-1))	zinc finger protein	KIAA1473 protein	repressor transcriptional factor	Unknown (protein for MGC:23189)	data source:SPTR, source key:Q9N5L6, evidence:ISS~putative~related to	H23L24.3 PROTEIN	Hypothetical protein H23L24.3	CG5987 gene product	cyclophilin-like protein	cyclophilin-like protein CyP-60	cyclophilin-like protein	Unknown (protein for MGC:32104)	unnamed protein product	unnamed protein product	zinc finger protein 43 (HTF6)	ZNF43
r Probability Score	1.00E-133	4.00E-88	5.00E-84	0	0	1.00E-114	1.00E-133	1.00E-129		6.00E-97		0	2.00E-85	4.00E-13	2.00E-20	2.00E-20	2.00E-20	0	0	0	1.00E-41		1.00E-40	1.00E-33	1.00E-116	1.00E-116	1.00E-116	6.00E-94	2.00E-68	2.00E-68	0	0
GI Number P	g16041142	g14017813	g11323323	g17064170	g4240233	g14495695	g13435476	g12849125		g]2842006		g10047211	g14388334	g7298275	g2306773	g11137801	g1373394	g7959207	g1017722	g16041769	g12855389		915718609	g7301565	g1199602	g1199598	g1199600	g17511871	g14042715	g7023417	g16306806	g38032
Stop	<u>8</u>	8	8	1954	1954	1954	895	895		895		2030	2030	2030	586	286	286	1422	1422	1422	723		723	723	843	843	8	528	278	528	1370	1370
•••	284	284	284	299	299	299	ω	œ		∞		\$	5 45	8 45	209	209	209	_	_	_	_		_	_	2	2	2	4	4	4	က	က
ength	569	569	569	552	552	552	296	5%		296		462	462	462	126	126	126	474	474	474	241		241	241	258	258	258	161	161	<u>1</u> 9	456	456
Frame Length	7	7	7	7	2	7	7	2		7		က	က	ო	8	7	7	_	_	-	_		_	_	_	_	_	_	_	_	က	ო
SEQ ID NO:	724	724	724	725	725	725	726	726		726		727	727	727	728	728	728	729	729	729	730		730	730	731	731	731	732	732	732	733	733

Annotation		to		•		n kappa constant	anti-Sm antibody VL chain (V kappa 4/J kappa 3)				ankyrin repeat domain-containing SOCS hax protein Ash-15	ankyrin repeat domain-containing SOCS box protein Ash-15		dJ34B21.5 (PUTATIVE novel protein with ZU5 domain similar to part of Tight	Junction Protein 201 (TJP1) and UNC5 Homologs)	nation protein	r UNOSHO		contains similarity to Pfam domain: PF00400 (WD domain, G-beta repeat)
,	zinc finger protein	unnamed protein product	hypothetical protein	zinc finger protein ZNF136	precursor	Similar to immunoglobulin kappa constant	anti-Sm antibody VL cha	hypothetical protein	hypothetical protein	RGL1	ankyrin repeat domain-c	ankyrin repeat domain-c	hypothetical protein	dJ34B21.5 (PUTATIVE nov	Junction Protein 201 (TJF	rostral cerebellar malformation protein	transmembrane receptor UNC5H2	CG6734 gene product	contains similarity to Pfar
GI Number Probability Score	0	1.00E-117	6.00E-85	6.00E-76	1.00E-59	5.00E-59	1.00E-58	9.00E-80	3.00E-79	9.00E-63	1.00E-133	1.00E-125	1.00E-105	4.00E-19		7.00E-17	5.00E-15	1.00E-132	6.00E-25
_		g14042850	g12052983	g487785	g37910	g17511825	g560842	g6808105	g13676443	g18146831	g18034086	g18034106	g15451412	g5050962		g2088527	g2055394	g7297900	g3880102
Stop	1370	1363	1363	1363	8	8	8	191	191	19	1167	1167	1167	1297		1297	1297	3657	3657
		(1)	7	0	7	7	ď	235	235	235	433	433	433	7		0	7	8	8
Length	456	2 54	4 54	45 4	153	153	153	319	319	319	245	245	245	432		432	432	1206	1206
Frame Length	က	7	7	7	7	7	7	-	_	_	_	_	-	7		7	7	_	_
SEQ ID NO:	733	734	734	734	735	735	735	736	736	736	737	737	737	738		738	738	739	739

Score=38.1, E-value=6.5e-08, N=3, PF01363 (FYVE zinc finger), Score=115.4, E-

value=1.30-31, N=1; PF02138 (Beige/BEACH domain), Score=773.7, E-value=2.40-229, N=1~cDNA EST yk136h12.5 comes from this gene~cDNA EST

comes from this gene-cDNA EST yk193g4.5 comes from this gene-cDNA EST

yk342c8.5 comes from this gene~cDNA EST yk356b1.5 comes from this

gene~cDNA EST yk399d2.5 comes from this gene

yk265b4.5 comes from this gene~cDNA EST yk319c2.5 comes from this gene~cDNA EST yk359g9.5 comes from this gene~cDNA EST yk359g9.5

Annotation	contains similarity to Pfam domain: PF00400 (WD domain, G-beta repeat).	Score=38.1, E-value=6.5e-08, N=3; PF01363 (FYVE zinc finger), Score=115,4, E-	value=1,3e-31, N=1; PF02138 (Beige/BEACH domain), Score=773.7, E-	value=2.4e-229, N=1~cDNA EST yk136h12.5 comes from this gene~cDNA FST	yk265b4.5 comes from this gene~cDNA EST yk319c2.5 comes from this	Gene~cDNA EST vk359a9.5 comes from this gene~cDNA EST vk435~45		comes from mis gene-culva ESI yk 193g4.5 comes from this gene-culva EST	yk342c8.5 comes from this gene~cDNA EST yk356b1.5 comes from this	gene∼cDNA EST vk399d2.5 comes from this gene	BC331191 1	KIAA1559 protein	hvoothetical protein	CICO-Keto redirctore IncopADD	Similar to aido-Veto redinates	DIKEN ONA 1810AS110 ASS				dJ54B20.6 (zinc finger protein 81 (HFZ20))	Unknown (protein for MGC:20975)	Unknown (protein for MGC:24494)	zinc finger protein 276 C2H2 type	unnamed protein product	data source:Pfam, source key:PF00093, evidence:ISS~putative~von	Willebrand factor type C domain containing protein	Kielin	zinc finger protein	Similar to Kruppel associated hox (KRAR) zinc finger 1	kruppel-like protein	hypothetical protein	zinc finaer protein 276 C2H2 type	Unknown (protein for MGC:24494)	formin-binding protein 17
GI Number Probability Score	6.00E-25 c	S	>	>	>	· a	0 (Ο	>	O	8.00E-17 B	2.00E-13 K		_				-		70	0	0	4.00E-45 zi	, 0	1.00E-120 d	>	1.00E-54 K	4.00E-18 zi		•	2.00E-54 h			0 fc
	g3880448										g5080758	g10047183	g15021881	g14279194	a12804019	015215178	016551783	G881564	21445420	914450032	g15559662	g16877077	g9886891	g16552010	g12836633		g7768636	g347906	g13435780	g5823276	g11611571	g9886891	g16877077	g13936547
Stop	3657										79	791	791	2	8	646	1035	1035	1035	3	1559	1559	1559	1542	1542		1542	345	345	345	905	802	905	2082
Start	8										447	447	447	8	8	8	99	2	3 2	8 (က	က	က	_	_		_	157	157	157	366	366	38	_
ength.	1206										115	115	115	215	215	215	290	8		2 5	519	519	519	514	514		514	છુ	જ	83	168	168	168	694
Frame L	_										က	က	က	7	7	8	_	,	. ,-	- (က	က	_	_	,	_	_	_	_	က	က	က	-
SEQ ID NO: Frame Length Start	739										741	741	741	742	742	742	743	743	7/3	? ;	4	744	744	745	745	1	745	746	746	746	748	748	748	749

_	Elb 55k protein (fransformation)	transformation-associated protein	54.7 kDa	phosphoinositol 3-phosphate binding protein-1	Similar to pleckstrin homology domain-containing, family A	(phospholnositide binding specific) member 4	TPC2	KIAA1140 protein	unknown	BcDNA:LD21719 gene product	unnamed profein product	hypothetical protein FLJ20557	unnamed protein product	CRP2 (cysteine-rich protein 2)	cysteine-rich protein 2	cystelne-rich protein 2	hypothetical protein	hypothetical protein	unnamed profein product	kelch-like protein KLHL6	unnamed protein product	KIAA1129 protein	Similar to mitotic control protein dis3 homotog	Unknown (profein for IMAGE:4561365)	KIAA1008 protein	ribosomal protein L5	ribosomal protein L5 (AA 1-297)	data source:MGD, source key:MGI:102854,	evidence:ISS-putative-ribosomal protein L5	KIAA0638 protein
GI Number Probability Score g3043632 0	0	0	1.00E-163	0	0		1.00E-33	0	1.00E-146	1.00E-146	4.00E-28	7.00E-27	7.00E-27	1.00E-131	1.00E-130	1.00E-130	1.00E-176	1.00E-124	1.00E-118	1.00E-120	3.00E-36	6.00E-31	0	0	1.00E-154	1.00E-173	1.00E-171	1.00E-171		1.00E-118
			•		g18204000		g10045840		g4972746		g16550444	-	-		g12805265	g12805261	g12052983	g5262560	~	g17105197	g10439155	g6329805	g18314381	g15559519	g17225572		g57125	912850263		g3327090
Stop 2082 2082	1796	1796	17%	2786	2786		2786	2538	2538	2538	267	267	267	633	633	633	1787	1787	1787	=	711	71	2917	2917	2917	939	626	939	;	2264
Start																														1614
ength 694	448	448	448	800	8		8	846	846	846	117	117	117	211	211	211	386	386	386	237	237	237	972	972	972	313	313	313	ŗ	217
Frame Length 1 694 1 694	m	က	က	က	က		က	_	_	_	_	_	_	_		_	က	က	က	_	_	_	7	7	7	_	_	-	(n
SEQ ID NO: 749 749																														

Annotation unnamed protein product Unknown (protein for MGC:4704) bA255A11.3 (novel protein similar to KIAA1074) bA526D8.2 (novel protein similar to KIAA1074)	KIAA1502 protein unnamed protein product cerebral cell adhesion molecule Similar to RIKEN cDNA 2810468K17 aene	Unknown (protein for MGC: 15935) hypothetical protein tetraspan TM4SF; Tspan-4 transmembrane 4 superfamily member 7	transmembrane 4 superfamily member 7 hUPF3B data source:SPTR, source key:Q9H1J0, evidence:ISS~homolog to HUPF3B~putative	data source:SPTR, source key:Q9Z2B2, evidence:ISS~putative~similar to BRAIN MITOCHONDRIAL CARRIER PROTEIN-1 (BMCP-1) data source:SPTR, source key:Q9Z2B2, evidence:ISS~putative~similar to BRAIN MITOCHONDRIAL CARRIER PROTEIN-1 (BMCP-1) dJ20i3.1 (brain mitochondrial carrier protein-1 (BMCP1))	thymopoletin gamma thymopoletin gamma Similar to RIKEN cDNA B830026H24 gene data source:SPTR, source key:P97584, evidence:ISS~homolog to NADP- DEPENDENT LEUKOTRIENE B4 12-HYDROXYDEHYDROGENASE (EC 1.1.1) (DITHIOLETHIONE-INDUCIBLE GENE-1)~putative
GI Number Probability Score g14042238 1.00E-109 g15991879 1.00E-109 g12314195 1.00E-121 g12314164 3.00E-97 g12053099 2.00E-71	0000	0 0 4.00E-29 4.00E-29	4.00E-29 1.00E-161 1.00E-158 6.00E-76	7.00E-62 7.00E-62 5.00E-51 0	0 1.00E-177 0 0
GI Number F g14042238 g15991879 g12314195 g12314164 g12053099	g7959265 g14035822 g5764665 g13623407	g14495695 g13874543 g2997747 g17939510	g12653241 g12232324 g12620408 g12860428	g12856090 g12854104 g4678718 g508729	g3283900 g1335847 g18204012 g12861800
Stop 2264 2264 689 689 689	2739 2739 2739 2430	2430 2430 1486 1486	1486 1002 1002 1002	822 822 822 1272	1272 1272 1291 1291
Start 1614 1614 3 3	958 958 364	2 2 2 2 2	243	439 439 139	139 139 218 218
	594 594 594 689	689 689 248 248	304 304 304	128 128 128 378	378 378 358 358
Frame Length 3 217 3 217 3 229 3 229		88	8		00
SEQ ID NO: 760 760 761 761 761	762 762 762 763	\$ \$ \$ \$	764 765 765 765 765	8	767 767 768 768

Annotation Anniquity with quinone oxidoreductase, contains similarity to Pfam	domain: PF00107 (Zinc-binding dehydrogenases), Score=-80.6, E-value=6.2e-06, N=1~cDNA EST yk164b4.5 comes from this gene-cDNA EST yk164b4.3	ochica inciri i in gene - conto Est yazottista contres nom mis gene alpha-2-macroglobulin receptor	low density lipoprotein receptor related protein LRP1B/LRP-DIT	CG12139 gene product	unnamed protein product	zinc finger protein HIT-4	dJ54B20.4 (novel KRAB box containing C2H2 type zinc finger protein)	KJAA1010 protein	hypothetical protein	data source:SPTR, source key:Q9Y2L3, evidence:ISS~homolog to KIAA1010	PROTEIN (FRAGMENT)~putative	KIAA1014 protein	unnamed protein product	hypothetical protein	unnamed protein product	data source:SPTR, source key:Q9VS60, evidence:ISS~putative~related to	CG8576 PROTEIN	F53B1.2 gene product	Similar to spleen tyrosine kinase	Similar to spleen tyrosine kinase	protein tyrosine kinase	unknown	INFAIP1-like protein	polymerase delta-interacting protein 1	serine/threonine protein kingse	Similar to ELKL motif kingse	serine/threonine protein kingse	GAC-1	KIAA0874 protein
GI Number Probability Score g3878713 5.00E-84		1.00E-22		3.00E-20	1.00E-137	4.00E-67	3.00E-44	0	1.00E-75	9.00E-63		0	0	0	1.00E-127	1.00E-121	Ŭ	5.00E-28	0	0	0	1.00E-102		2.00E-99	0	0	0		0
GI Number Pl g3878713		g438007	98926243	g7291057	g16553391	g12483900	g14456631	g4589670	g15207833	g12845768		g4589678	g10434696	g6808095	g16553765	g12839186		g1072250	g12804475	g12804209	g479013	g18027350	g15072406	g16152040	g1749794	g14250622	g57920	g11596412	g4240237
Stop 1291		1301	130	130	6 65	665	865	3468	3468	3468		2686	2686	2686	829	829		829	2052	2052	2052	722	722	722	2663	2663	2663	6424	6424
Start 218		42	45	45	က	က	ო	1477	1477	1477		1433	1433	1433	7	7		7	145	145	145	48	8	84	276	276	276	224	224
Length 358		420	420	420	221	22	23	%	%	%		418	418	418	276	276		276	636	636	636	225	225	225	7%	2%	26	2067	2067
Frame L		က	က	က	က	က	က	_	_	_		7	7	7	7	2		7	_	_	_	က	က	က	ന	က	က	7	7
SEQ ID NO: Frame Length Start 768 2 358 218		492	492	769	770	770	770	177	177	177		772	772	772	773	773		773	774	774	774	776	776	776	777	777	777	778	778

Annotation	unnamed protein product	unnamed protein product	UM protein prickle b	LIM protein prickle	dJ138B7.3.2 (lethal (3) malignant brain tumor (1(3)mbt) protein (Drosophila)	homolog (isoform 2) (KIAA0681))	KIAA0681 protein	dJ138B7.3.1 (continued from dJ862K6.1 in Em:ALD31681)	DNA binding protein p96PIF	glucocorticoid modulatory element bindina protein 1	glucocorticoid modulatory element binding protein 1	KIAA0640 protein	SWAP-70 homolog	SWAP-70 protein	mitochondrial solute carrier	HT015 protein	mitochondrial solute carrier-like protein	Rig protein	small GTP-binding tumor suppressor 1	BC41195_1	protocadherin-9	hypothetical protein	hypothetical protein	unnamed protein product	Mitochondrial carrier proteins containing protein~data source:Pfam. source	key:PF00153, evidence:ISS-putative	Similar to RIKEN cDNA 4930433D19 gene	Similar to RIKEN cDNA 3830421M04 gene	data source:SPTR, source key:Q63615, evidence:ISS~homolog to	VACUOLAR PROTEIN SORTING HOMOLOG R-VPS33A-putative	vacuoiar profein sorfing nomolog r-vps33a	VSGP/F-spondin
robability Score		0	0	0	Ö		0	0	0	0	0	1.00E-179	1.00E-167	1.00E-167	4.00E-45	4.00E-45	2.00E-42	1.00E-110	1.00E-110		0	0	0	1.00E-104		_	2.00E-87	0	0	c		o o
GI Number Pr	g10437204	g16551917	g16356673	g14595658	g11323324		g3327176	g11323323	g5764636	g12655229	99863866	g3327094	g7381109	g12653667	g7688677	g7578783	g16506178	g16555334	g16508176	g4235148	g9845485	g14388339	g13874450	g18615326	g12854500	-	g15277499	g16741627	g12859683	2147748	914//400	02.87261116
Stop	6424	2800	2800	2800	1615		1615	1615	1809	1809	1809	1301	1301	1301	2761	2761	2761	715	715	715	4294	4294	4294	707	707		707	1803		1803	3 5	5677
Start		284	284	284	7		0	7	118	118	118	8	18	18	2291	2291	2291	0	8	8	656	65 6	65 6	72	72		72	241	241	241	Ţ -	-
Length	2067	839	839	839	538		538	538	564	5 6	5 8	428	428	428	157	157	157	238	238	238	1213	1213	1213	212	212		212	521	251	501	010	o o
Frame Length	7	7	7	7	5		7	7	_	_	_	က	က	က	7	0	7	7	7	7	7	7	7	ന	က	,	က	_	_			-
SEQ ID NO:	778	779	779	779	780		780	780	781	781	781	782	782	782	783	783	783	784	784	784	785	785	785	786	786	į	786	787	787	787	967	3

Annotation												data source:SPTR, source key:Q9VKF0, evidence:ISS~putative~related to	-		
	VSGP/F-spondin	f-spondin	hypothetical protein	WD repeat protein BIG-3	Similar to hypothetical protein	KIAA1473 protein	zinc finger protein	unnamed protein product	unnamed protein product	CG8027 gene product	putative notch receptor protein	data source:SPTR, source key:Q	CG14939 PROTEIN	cyclin-box carrying protein	hypothetical protein
GI Number Probability Score	0	0	1.00E-52	1.00E-52	1.00E-52	2.00E-26	4.00E-26	6.00E-26	1.00E-100	3.00E-25	2.00E-08	1.00E-132		1.00E-132	1.00E-124
			g6714707		g16359284			g16551398				g12856757		g15788437	015451434
												1289		1289	1289
Start	_	_	112	112	211	145	145	145	_	_	_	17		171	171
ength	818	818	113	113	113	149	149	149	178	178	178	373		373	373
Frame L	-	~	_	_	_	_	_	1 149 145	_	_	_	က		က	က
SEQ ID NO:												792		792	792

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	rrogram	Description	Kerence	rarameter i mesnoid
	ABI FACTURA	A program that removes vector sequences and masks ambiguous bases in nucleic acid sequences.	Applied Biosystems, Foster City, CA.	
	ABIPARACEL FDF	A Fast Data Finder useful in comparing and annotating amino acid or nucleic acid sequences.	Applied Biosystems, Foster City, CA; Paracel Inc., Pasadena, CA.	Mismatch <50%
	ABI AutoAssembler	A program that assembles nucleic acid sequences.	Applied Biosystems, Foster City, CA.	
	BLAST	A Basic Local Alignment Search Tool useful in sequence Altschul, S.F. et al. (1990) J. Mol. Biol. 215:403- ESTs: Probability value= 1.0E-8 or less; similarity search for amino acid and nucleic acid 410; Altschul, S.F. et al. (1997) Nucleic Acids Full Length sequences: Probability value sequences. BLAST includes five functions: blastp, Res. 25:3389-3402. https://doi.or.loc.10 or less blastn, blastx, tblastn, and tblastx.	Altschul, S.F. et al. (1990) J. Mol. Biol. 215:403-410; Altschul, S.F. et al. (1997) Nucleic Acids Res. 25:3389-3402.	ESTs: Probability value= 1.0E-8 or less; Full Length sequences: Probability value= 1.0E-10 or less
222	FASTA	A Pearson and Lipman algorithm that searches for similarity between a query sequence and a group of sequences of the same type. FASTA comprises as least five functions: fasta, tfasta, fastx, tfastx, and ssearch.	Pearson, W.R. and D.J. Lipman (1988) Proc. Natl. Acad Sci. USA 85:2444-2448; Pearson, W.R. (1990) Methods Enzymol. 183:63-98; and Smith, T.F. and M.S. Waterman (1981) Adv. Appl. Math. 2:482-489.	ESTs: fasta E value=1.06E-6; Assembled ESTs: fasta Identity= 95% or greater and Match length=200 bases or greater; fastx E value=1.0E-8 or less; Full Length sequences: fastx score=100 or greater
	BLIMPS	A BLocks IMProved Searcher that matches a sequence against those in BLOCKS, PRINTS, DOMO, PRODOM, Acids Res. 19:6565-6572; Henikoff, J.G. and Sand PFAM databases to search for gene families, and PFAM databases to search for gene families, sequence homology, and structural fingerprint regions. Comput. Sci. 37:417-424.	:-	Probability value= 1.0E-3 or less
	HMMER	An algorithm for searching a query sequence against hidden Markov model (HMM)-based databases of protein family consensus sequences, such as PFAM.	Krogh, A. et al. (1994) J. Mol. Biol. 235:1501-PFA 1531; Sonnhammer, E.L.L. et al. (1988) Nucleic less; Acids Res. 26:320-322; Durbin, R. et al. (1998) Sign Our World View, in a Nutshell, Cambridge Univ. Press, pp. 1-350.	PFAM hits: Probability value= 1.0E-3 or less; Signal peptide hits: Score= 0 or greater
	ProfileScan	An algorithm that searches for structural and sequence motifs in protein sequences that match sequence patterns defined in Prosite.	Gribskov, M. et al. (1988) CABIOS 4:61-66; Gribskov, M. et al. (1989) Methods Enzymol. 183:146-159; Bairoch, A. et al. (1997) Nucleic Acids Res. 25:217-221.	Normalized quality score CCG-specified "HIGH" value for that particular Prosite motif. Generally, score=1.4-2.1.

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	Description	Reference	Parameter Threshold
4 %	A base-calling algorithm that examines automated sequencer traces with high sensitivity and probability.	Ewing, B. et al. (1998) Genome Res. 8:175-185; Ewing, B. and P. Green (1998) Genome Res. 8:186-194.	
DE E. B A	A Phils Revised Assembly Program including SWAT and CrossMatch, programs based on efficient implementation of the Smith-Waterman algorithm, useful in searching sequence homology and assembling DNA sequences.	Smith, T.F. and M.S. Waterman (1981) Adv. Appl. Math. 2:482-489; Smith, T.F. and M.S. Waterman (1981) J. Mol. Biol. 147:195-197; and Green, P., University of Washington, Seattle, WA.	Score= 120 or greater; Match length= 56 or greater
~ ~	A graphical tool for viewing and editing Phrap assemblies.	Gordon, D. et al. (1998) Genome Res. 8:195- 202.	
S	A weight matrix analysis program that scans protein sequences for the presence of secretory signal peptides.	Nielson, H. et al. (1997) Protein Engineering 10:1-6; Claverie, J.M. and S. Audic (1997) CABIOS 12:431-439.	Score=3.5 or greater
7 10 0	A program that uses weight matrices to delineate transmembrane segments on protein sequences and determine orientation.	Persson, B. and P. Argos (1994) J. Mol. Biol. 237:182-192; Persson, B. and P. Argos (1996) Protein Sci. 5:363-371.	
7 0 %	A program that uses a hidden Markov model (HMM) to delineate transmembrane segments on protein sequences and determine orientation.	Sonnhammer, E.L. et al. (1998) Proc. Sixth Intl. Conf. On Intelligent Systems for Mol. Biol., Glasgow et al., eds., The Am. Assoc. for Artificial Intelligence (AAAI) Press, Menlo Park, CA, and MIT Press, Cambridge, MA, pp. 175-182.	
~ 	A program that searches amino acid sequences for patterns that matched those defined in Prosite.	Bairoch, A. et al. (1997) Nucleic Acids Res. 25:217-221; Wisconsin Package Program Manual, version 9, page M51-59, Genetics Computer Group, Madison, WI.	

CLAIMS

What is claimed is:

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- 1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:
 - a) a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396,
 - b) a naturally occurring polynucleotide sequence having at least 90% sequence identity to a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396,
 - c) a polynucleotide sequence complementary to a),
 - d) a polynucleotide sequence complementary to b), and
 - e) an RNA equivalent of a) through d).
- 2. An isolated polynucleotide of claim 1, comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:1-396.
 - 3. An isolated polynucleotide comprising at least 60 contiguous nucleotides of a polynucleotide of claim 1.
- 4. A composition for the detection of expression of disease detection and treatment molecule polynucleotides comprising at least one of the polynucleotides of claim 1 and a detectable label.
 - 5. A method for detecting a target polynucleotide in a sample, said target polynucleotide having a sequence of a polynucleotide of claim 1, the method comprising:
 - a) amplifying said target polynucleotide or fragment thereof using polymerase chain reaction amplification, and
 - b) detecting the presence or absence of said amplified target polynucleotide or fragment thereof, and, optionally, if present, the amount thereof.
 - 6. A method for detecting a target polynucleotide in a sample, said target polynucleotide comprising a sequence of a polynucleotide of claim 1, the method comprising:
 - a) hybridizing the sample with a probe comprising at least 20 contiguous nucleotides comprising a sequence complementary to said target polynucleotide in the sample, and which probe specifically hybridizes to said target polynucleotide, under conditions whereby a hybridization complex is formed between said probe and said target polynucleotide or fragments thereof, and

- b) detecting the presence or absence of said hybridization complex, and, optionally, if present, the amount thereof.
 - 7. A method of claim 5, wherein the probe comprises at least 30 contiguous nucleotides.
 - 8. A method of claim 5, wherein the probe comprises at least 60 contiguous nucleotides.
- 9. A recombinant polynucleotide comprising a promoter sequence operably linked to a polynucleotide of claim 1.
 - 10. A cell transformed with a recombinant polynucleotide of claim 9.

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- 11. A transgenic organism comprising a recombinant polynucleotide of claim 9.
- 12. A method for producing a disease detection and treatment molecule polypeptide, the method comprising:
 - a) culturing a cell under conditions suitable for expression of the disease detection and treatment molecule polypeptide, wherein said cell is transformed with a recombinant polynucleotide of claim 9, and
 - b) recovering the disease detection and treatment molecule polypeptide so expressed.
 - 13. A purified disease detection and treatment molecule polypeptide (MDDT) encoded by at least one of the polynucleotides of claim 2.
 - 14. An isolated antibody which specifically binds to a disease detection and treatment molecule polypeptide of claim 13.
 - 15. A method of identifying a test compound which specifically binds to the disease detection and treatment molecule polypeptide of claim 13, the method comprising the steps of:
 - a) providing a test compound;
 - b) combining the disease detection and treatment molecule polypeptide with the test compound for a sufficient time and under suitable conditions for binding; and
 - c) detecting binding of the disease detection and treatment molecule polypeptide to the test compound, thereby identifying the test compound which specifically binds the disease detection and treatment molecule polypeptide.

- 16. A microarray wherein at least one element of the microarray is a polynucleotide of claim
- 17. A method for generating a transcript image of a sample which contains polynucleotides, the method comprising the steps of:
 - a) labeling the polynucleotides of the sample,
 - b) contacting the elements of the microarray of claim 16 with the labeled polynucleotides of the sample under conditions suitable for the formation of a hybridization complex, and
 - c) quantifying the expression of the polynucleotides in the sample.

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- 18. A method for screening a compound for effectiveness in altering expression of a target polynucleotide, wherein said target polynucleotide comprises a polynucleotide sequence of claim 1, the method comprising:
- a) exposing a sample comprising the target polynucleotide to a compound, under conditions
 suitable for the expression of the target polynucleotide,
 - b) detecting altered expression of the target polynucleotide, and
 - c) comparing the expression of the target polynucleotide in the presence of varying amounts of the compound and in the absence of the compound.
 - 19. A method for assessing toxicity of a test compound, said method comprising:
 - a) treating a biological sample containing nucleic acids with the test compound;
 - b) hybridizing the nucleic acids of the treated biological sample with a probe comprising at least 20 contiguous nucleotides of a polynucleotide of claim 1 under conditions whereby a specific hybridization complex is formed between said probe and a target polynucleotide in the biological sample, said target polynucleotide comprising a polynucleotide sequence of a polynucleotide of claim 1 or fragment thereof;
 - c) quantifying the amount of hybridization complex; and
 - d) comparing the amount of hybridization complex in the treated biological sample with the amount of hybridization complex in an untreated biological sample, wherein a difference in the amount of hybridization complex in the treated biological sample is indicative of toxicity of the test compound.
 - 20. An array comprising different nucleotide molecules affixed in distinct physical locations on a solid substrate, wherein at least one of said nucleotide molecules comprises a first oligonucleotide or polynucleotide sequence specifically hybridizable with at least 30 contiguous nucleotides of a target polynucleotide, said target polynucleotide having a sequence of claim 1.

- 21. An array of claim 20, wherein said first oligonucleotide or polynucleotide sequence is completely complementary to at least 30 contiguous nucleotides of said target polynucleotide.
- 22. An array of claim 20, wherein said first oligonucleotide or polynucleotide sequence is completely complementary to at least 60 contiguous nucleotides of said target polynucleotide
 - 23. An array of claim 20, which is a microarray.
- 24. An array of claim 20, further comprising said target polynucleotide hybridized to said first oligonucleotide or polynucleotide.
 - 25. An array of claim 20, wherein a linker joins at least one of said nucleotide molecules to said solid substrate.
- 26. An array of claim 20, wherein each distinct physical location on the substrate contains multiple nucleotide molecules having the same sequence, and each distinct physical location on the substrate contains nucleotide molecules having a sequence which differs from the sequence of nucleotide molecules at another physical location on the substrate.
- 27. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of:
 - a) an amino acid sequence selected from the group consisting of SEQ ID NO:397-792,
 - b) a naturally occurring amino acid sequence at least 90% identical to an amino acid sequence selected from the group consisting of SEQ ID NO:397-792,
 - c) a biologically active fragment of an amino acid sequence selected from the group consisting of SEQ ID NO:397-792, and

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- d) an immunogenic fragment of an amino acid sequence selected from the group consisting of SEQ ID NO:397-792.
- 28. An isolated polypeptide of claim 27, comprising a polypeptide sequence selected from the group consisting of SEQ ID NO:397-792.

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